American Aviation

MARCH 5, 1951 35c

THE INDUSTRY'S FIRST NEWS MAGAZINE

Traveler's Notebook

(Jottings in the notebook en route through Southeast Asia to the Middle East.)

CHAIN REACTION. It is a long way from the blood-tinged streams that feed into the icy Han River of Korea to the rice fields, rubber plantations and tin mines of tropical Southeast Asia. But the tides of battle in Korea are felt in Southeast Asia just as a seismograph records tremblings in another part of the world.

by W. W. P.

The fate of Southeast Asia is being determined in Korea. The war news is top news in Saigon, Singapore, Bangkok and Rangoon. Had the U.N. been pushed out of far-away Korea, all Southeast Asia was destined to fall under the rule of Chinese Reds. Conversely the beating being taken by the Reds in Korea is keeping Southeast Asia off the critical list.

The United States has never been too aware of the group of countries and the strange mixture of races that occupy the area south of China and east of India. But the importance of this area to the western world can scarcely be over-estimated. Here is the rice bowl for China itself and here are the rubber plantations and the tin mines so vital to the modern world of the west.

A small but hard core of Communists is creating ample trouble. The fighting in French Indochina is well known. Guerilla tactics in the Malay Peninsula have been successful in curtailing rubber and tin output. Ideological penetration has been increasing in Thailand (Siam) and Burma. But all of this advance can be liquidated by forward-looking programs on the part of the west provided Red China is unable to mass an all-out and well-equipped military offensive. The beating of Red China in Korea makes the latter outlook unlikely.

Over-riding almost every other problem of Southeast Asia is the fact of self-determination. European Colonialism is through. In some places it has been dying hard but any realistic appraisal must admit to the fact that the peoples of Southeast Asia are going to attain independence of western rule. In India, Indonesia, the Philippines, in Thailand and in Burma, they already have it. The solution of French Indochina is a guarantee of independence. With assistance from the west, Southeast Asia can become a bulwark against Communist indoctrination

(Turn to Page 7)

Panagra's Sales Manager

Sales manager for Pan American-Grace Airways is Edward G. Bern, who started flying in 1917 and who has spent most of the last 30 years selling air transportation. Bern headed airlines in the 20's and 30's, had a "flying circus," and later was with American Airlines, Hughes Aircraft Co. and Peruvian International Airways before joining Panagra.

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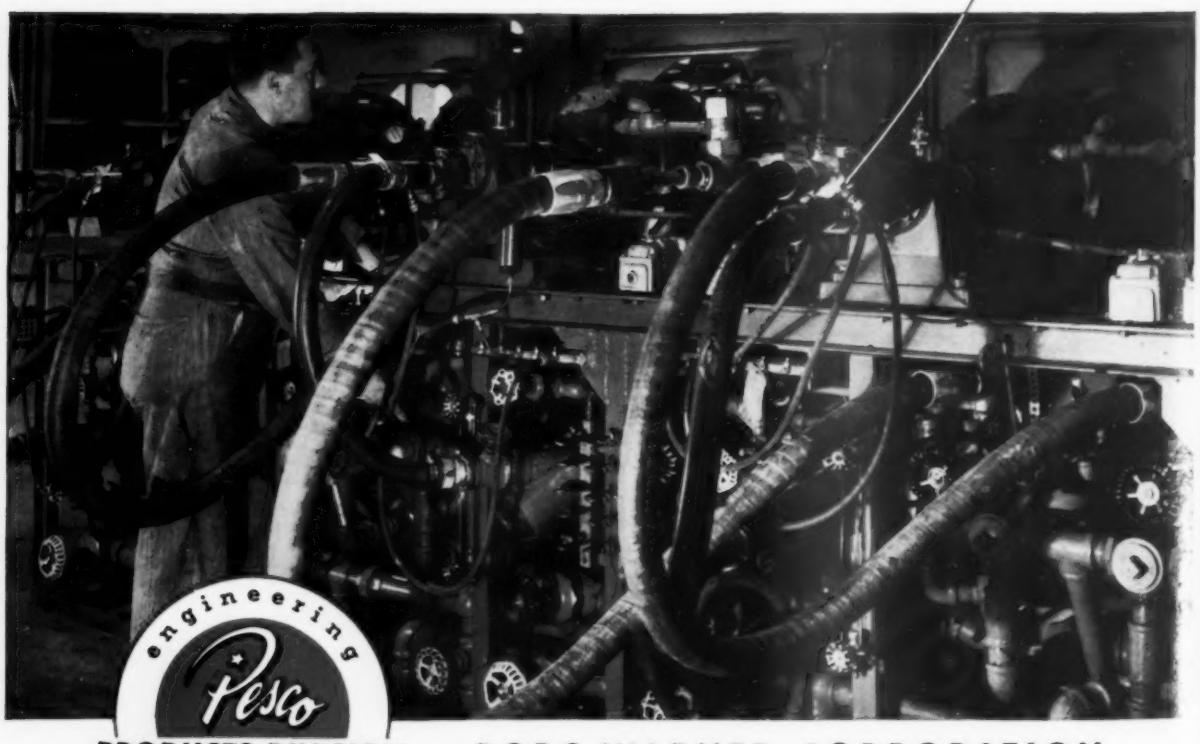

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NEWS SECTION

Volume 14 Number 33

March 5, 1951

a LOOK at the WEEK

Defense officials are planning for capacity to produce 18,000 jet engines monthly, to go along with announced aim of having capacity to produce 500 airframes a year.

•

Completion of first phase of NEPA (see adjoining column) started speculation on what plane might be first to be powered by atom engine. Point to remember is that design studies on such a plane haven't started yet, although they'll probably be underway soon. Flying test bed for first atom engine will be modified version of largest plane we have flying at the time.

•

With speed-up in contract awards, DO system is becoming somewhat strained. Situation might develop where there'd be more DO's than materials available. Hope is that system will hold up until Controlled Materials Plan is ready.

•

Almost all industry-government task groups working on civil aviation mobilization plans have turned in their reports. Final combined report is expected to be completed by Mar. 15 deadline.

•

Work on future trans-Atlantic airline pattern, to supersede present Atlantic certificates which expire next year, will be started shortly by CAB.

•

Harold Jones may resign as CAB member shortly after he concludes present civil aviation talks with French in Paris. He's wanted to leave CAB for some time.

•

Airlines will file applications with Defense Production Administration for five-year write-off, for tax purposes, of planes bought since start of 1950. It's permitted under law if airline can establish that equipment is needed for defense.

•

National Production Authority has asked Federal Trade Commission to make spot checks to find out how well NPA orders are understood and carried out. First check will be among aluminum fabricators. NPA will then take compliance action if necessary.

•

Tungsten-consuming industries have warned National Production Authority that continued unavailability of tungsten will result in serious loss of production of tool steels and electronics equipment.

AF Decentralizes Procurement

In a move expected to be of substantial benefit to manufacturers, the Air Force on Mar. 1 put into effect a major decentralization of procurement activities formerly concentrated at Air Materiel Command headquarters, Wright-Patterson AFB, Dayton, O.

Although actual contract awards will still be handled at Wright-Patterson, six district offices are now able to give manufacturers the answers to many contract problems, and to disburse contract funds. Former AF field offices had no such powers.

The change is expected to facilitate purchase of AF equipment by streamlining administration of contracts. Much of this work load was formerly carried by Directorate of Procurement office at Dayton. Manufacturers should be saved the expense of numerous trips to the Dayton headquarters.

Six Offices: New districts are AF **Northeastern** Procurement District, with headquarters in Boston, Mass.; **Eastern,** New York City; **Central,** Detroit; **Mid-Central,** Chicago; **Southern,** Ft. Worth, and **Western,** Los Angeles. Eliminated is the former field office at Dayton.

Plant Representative Offices: AF plant representative offices at Boeing Airplane Co., Seattle and Wichita; Allison Division of General Motors, Indianapolis, and NEPA Division of Fairchild Engine & Airplane Corp., Oak Ridge, Tenn., have been made part of the districts embracing their localities.

Powers: District offices will conduct their own administrative affairs such as advising suppliers on legal phases of contracts; disbursement of contract payments; expansion of personnel and facilities as needed, and other major functions now carried out at Dayton.

Boundary Changes: State of Colorado and state of Kansas, minus Wyandotte County (Kansas City area), formerly part of Chicago procurement field office, have been transferred to Southern district; entire state of Indiana has been included in Mid-Central; Central district has been expanded to include Ohio, West Virginia, Kentucky and Tennessee.

EAL Buys 25 More 404's

A $20,000,000 order for 25 more Martin 404's has been placed with The Glenn L. Martin Co. by Eastern Air Lines. Purchase represents exercise of an option in the original contract under which EAL bought 35 of the planes. Martin now has a total of 100 404's on order, 60 for EAL and 40 for TWA.

Captain E. V. Rickenbacker, EAL president, said the purchase was made at this time "in response to the expression by the Civil Aeronautics Board and other government agencies that domestic air transport facilities should be expanded to meet the accelerated demands of the national emergency."

First Part of NEPA Project Completed

First part of the program to produce an atom-powered aircraft engine will end Apr. 30 and the second phase will start immediately.

Fairchild Engine & Airplane Corp., which was "highly commended" by the Air Force and Atomic Energy Commission, was prime contractor for the four-year first phase of NEPA (Nuclear Energy for Propulsion of Aircraft), and the second part will be handled by General Electric Co. at its Lockland, O., plant.

This second part, it is believed, will involve actual drafting of a blueprint for an atom-powered aircraft engine. First phase was concerned mostly with sliderule theory. There has been little speculation on how long it may be before an atom-powered plane can be flown.

Associated with Fairchild in the first phase were Allison Division of General Motors, Continental Motors, Lycoming Division of AVCO Manufacturing Corp., Pratt & Whitney Aircraft Division of United Aircraft Corp., Northrop Aircraft Inc., Westinghouse Electric Corp., General Electric, Wright Aeronautical, and Frederic Flader Inc.

MANUFACTURERS

Chevrolet to Build J-35: The Allison J-35-A-23 engine will be built by Chevrolet Division of General Motors Corp. in its recently acquired plant at Tonowanda, N. Y. Engine is described by Allison as most powerful jet in production.

Rotor-Craft Moves: Rotor-Craft Corp., engaged in military helicopter research and development, has moved from Grand Central Airport, Glendale, Calif., to 1850 Victory Blvd., Glendale.

Parachute Contract: Navy has awarded Switlik Parachute Co., Trenton, N. J., a $1,053,750 contract for 28-ft. nylon rip stop parachutes with quick fit harness, and a $117,603 contract for anti-exposure flying suits.

Expansion

Bell Aircraft Corp. is negotiating for additional 40,000 sq. ft. of floor space at site in Ft. Worth, Tex., to be used in conjunction with production at company's newly-acquired Globe Aircraft plant. This plant, which Bell took over on Feb. 22, will be used as jet engine nacelle build-up shop for Convair B-36 and Boeing B-47 jet pods.

Pratt & Whitney Aircraft Division now has 20,000 workers, a gain of 5,000 in last year and 2,500 in last three months. Company will need 11,000 more employes by 1952, an upward revision of previous estimate when future requirements were set at total of 27,500.

Ford Motor Co. has received over 50% of machine tools needed to start production of Pratt & Whitney R-4360 engine at Dodge-Chicago plant. The plant, which will be in full production early next year, now has employment of 3,000.

Subcontracts

Seeger Refrigerator Co., St. Paul, Minn., will build combat fuel tanks for F-86 Sabres under $4,000,000 subcontract with North American Aviation.

Luscombe Airplane Corp., Garland, Tex., has subcontract from Consolidated Vultee Aircraft Corp. for "substantial quantities" of four major turret door assemblies for B-36 bomber. Company is already making 26 different types of B-36 door assemblies.

Crosley Division of AVCO Manufacturing Corp. is doing subcontract work for Consolidated Vultee on the B-36 program and is producing bomb racks for Air Force. Company has also received substantial AF orders for production of fire control equipment.

Whirlpool Corp., St. Joseph, Mich., has been awarded a subcontract by Kaiser-Frazer Corp. for production of a section of the wing of the Fairchild C-119B which K-F will build under license to Fairchild Engine & Airplane Corp.

People: **William J. Carry**, formerly assistant to the president of BG Corp., has been elected vice president, and **Arthur Goldsmith** named vice president and secretary . . . Maj. Gen. **Edward M. Powers** (USAF-Ret.), Curtiss-Wright Corp.'s vice president and director of engineering, has been elected to the board of directors . . . **J. Copeland Gray**, former member of National Labor Relations Board, has been named special consultant on labor relations matters by Bell Aircraft Corp. . . . **Herman Doege**, formerly factory superintendent for Republic Aviation Corp., has been appointed director of company's assistance program with General Motors Corp. for GM production of F-84F jet fighter . . . **Dan T. Buist**, former assistant national sales director of Turco Products Inc., has been named national sales director, replacing **Lou Moulton**, retired . . . **Edwin C. Walton**, who has been acting general manager of Kaman Aircraft Corp., has been named vice president and general manager. **Emanuel Rosenblat**, formerly with Chase Aircraft Co., has been appointed Kaman's works manager.

PLANES & EQUIPMENT

AF Evaluates Super DC-3: Douglas YC-129, Air Force version of Super DC-3, is being evaluated by AF at Eglin AFB, Fla., as a rescue aircraft in competition with Chase C-123 and Fairchild C-119. Plane will gross about 40,000 lbs. as compared with 26,900 for commercial DC-3, 29,100 for C-47 and 34,500 for previously-announced Super C-47. Some of the additional weight will be used up in increased fuel capacity. At the new gross weight, YC-129 will use Aerojet Jato units for quick take-off and a tail parachute for deceleration after landing. Plane now flying uses dual wheels on main landing gear. Entire gear is of new design, somewhat resembling that on DC-4.

Helicopter Certificated: CAA approved type certificate has been received by Sikorsky Aircraft Division of United Aircraft Corp. for its three to four place S-52-2 helicopter. The craft, a development of earlier-approved S-52, has gross weight of 2,700 lbs. and is powered by 245-hp Franklin engine.

Canberra Crossing: English Electric Canberra B-2 jet bomber flew from Aldergrove Airfield, Northern Ireland, to Gander, Newfoundland, on Feb. 21 in four hours 40 minutes at average speed of 425 mph. Plane may be produced in U. S. by The Glenn L. Martin Co.

D-558-2: Douglas D-558-2 Skyrocket being put through high altitude evaluation program by Douglas Aircraft Co. for Navy at Muroc is being flown on rocket power alone, with jet engine removed.

C-97 Flying Lab: A Boeing C-97 obtained from Air Force under bailment agreement will be used by North American Aviation as a flying laboratory for its aerophysics section, which is working on automatic flight and fire control systems for aircraft, and on ground-to-ground guided missiles.

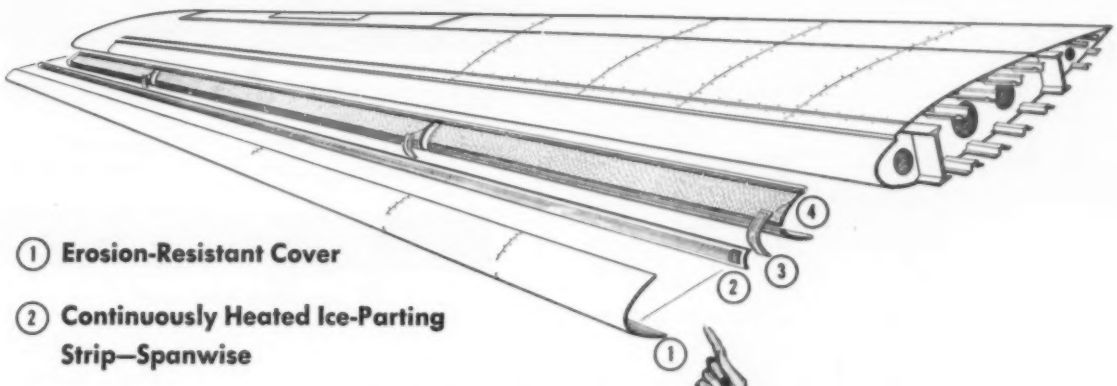
MILITARY

Interchangeability Plan: An interchangeability program designed to eliminate bottlenecks in the aircraft and the aluminum and magnesium extrusion industries has been inaugurated by Supply Division of Air Force's Air Materiel Command. Participating manufacturer relinquishes his exclusive rights to his extrusion dies and they become available to all other manufacturers in the program. Extrusion manufacturers may thus use any specified die in production of a specific extrusion for any aircraft company's requirements. Plane makers are now giving Supply Division lists of aircraft extrusion shapes considered to be active. After screening and cross-referencing, AF Catalog and Coordinating Section will publish data in catalog entitled "Aircraft Extruded Shapes—Aluminum and Magnesium Alloys."

AF May Take Wichita Field: Airport Use Panel of Air Coordinating Committee has recommended that Air Force take over Wichita Municipal Airport for use

(Continued opposite page 58)

TYPICAL DIAGRAM OF GOODYEAR ELECTRO-THERMAL ICEGUARD



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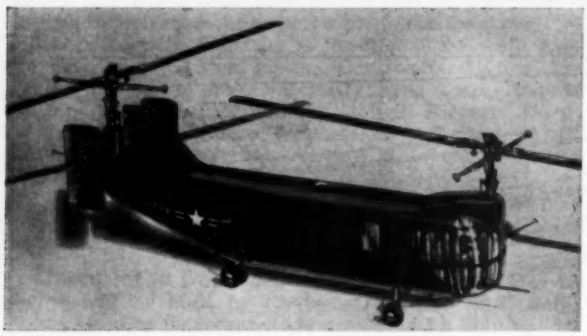
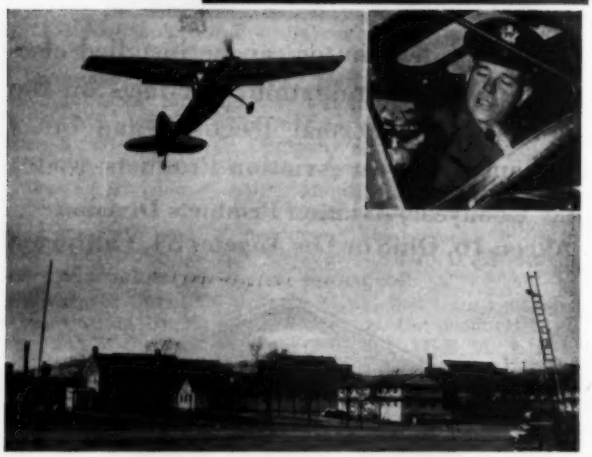
News In Pictures



Bell XHSL-1—First drawing of the new Bell XHSL-1 anti-submarine helicopter, of which three are now on order by the U. S. Navy. The new model, powered by a Pratt & Whitney R-2800 engine, represents the first departure by Bell from its single-rotor design used in the Bell 47D-1 and the YH-12. The intermeshing rotor blades, which use Bell's automatic stabilizing device, can be folded in line with the fuselage. Note the quadricycle landing gear.

Y C-1 2 9 — First photo of the USAF's YC-129, the Air Force version of the Douglas Super DC-3. Note the newly installed dual wheels on each main gear and eight Aerojet Jato bottles mounted under the fuselage at the wing trailing edge. Single plane was purchased by USAF for evaluation. U. S. Navy has 100 planes of this type on order.



Sharp Climb—Less than 100-foot takeoff run to clear a 30-foot wire was the standard set at Fort Myer's parade ground by the Cessna L-19. Army Chief of Staff General Collins (inset) recently took a test hop in the aircraft which the Army says is now en route to Korea "in quantity." The L-19 is powered by a Continental 213-hp. engine and meets the liaison aircraft speed requirements at 29% of rated engine horsepower.

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EDITORIAL

CONTINUED FROM PAGE ONE

—a regimentalized ideology which never has and never will fit the make-up of the individualistic peoples of that area.

Midst the confusion of the U.S. and U.N. policies in Korea and the strange type of war which permits of no strategic bombing, one thing is clear above all. This is that the fate of Southeast Asia hinges upon the victor in Korea. If the U.N. stays in the ring, Southeast Asia will remain out of Communist control. Southeast Asia wants to side with the winner. The stakes of that area are not ideological domination but the control of rubber, tin and rice. By a positive and enlightened program designed to aid that area economically, it can remain friendly to the west.

Air Power Limitations. It is virtually impossible to travel by road and train in the Federated Malay States. Well-armed Commie-led guerillas raid villages and rubber plantations, control highways and otherwise exert terror over a wide area. Their activities increase when the Reds win in Korea—decrease when the U.N. takes over the offensive.

So far the guerillas have had the better of the running battle. Rubber planters are trying to hang on only because of premium prices for their output.

Every day the R.A.F. makes bomber and fighter strikes at alleged guerilla hide-outs from bases on the island of Singapore, the crown colony at the base of the Malay peninsula. But this use of air power is extremely ineffective. If a guerilla is killed by air power it is more by accident than anything else. The Malay jungle is thick. A man disappears from view five feet off a road. The R.A.F. is getting lots of practice but kills few Commies.

Interestingly enough, it is air transport that is one of the best weapons against the guerillas. Everybody travels by air in the Malay States. And now the government is planning to supplement DC-3 service with single-engined de Havilland Beaver service which will reach into the small villages and plantations. Just as the airplane was the only possible "weapon" during the Russian blockade of Berlin, the transport airplane is the only sensible means of circumventing the guerillas in Malay.

Locusts vs. Wheat. The day I arrived in New Delhi, India, the newspapers told of the ten-mile cloud of locusts that had flown over the city the day before and headed on north to some unknown area which they would then proceed to strip of every green thing. These locust plagues are terrible. They blacken the skies, they destroy untold quantities of foodstuffs.

The same newspapers reported that the United States was being asked to send two million tons of wheat to India.

That same day I was told about this swarm of locusts. During the hatching period before the locusts could fly, they were located some distance from New Delhi and could have been killed with ease. They had eaten everything in a field and had come up to a stream on the other side of which was a green field. It is against the faith of the natives to kill any living thing, so the natives obligingly built a bridge for the locusts to cross over to greener pastures. Government officials, more enlightened, tried to stop the natives from helping the locusts but were unsuccessful. So the locusts prospered, ate up crops, reached the flying stage, and are in the process of destroying enough crops to feed a great many people.

So, dear people and taxpayers, we will send two million tons of wheat to people half-way around the world who, in their strange and fanatic ways, encourage insects and pests to eat up their crops.

Middle East. A gaping hole in American foreign policy is the Arab world which extends across the top of Africa and on through the Middle East and beyond. The U.S. has given much aid to Jewish Israel and has, in fact, granted just about every request from that new country. But it has largely ignored the Arab countries with adverse results. Such a one-sided policy was needless because the U.S. could have aided Israel without causing so much bitterness on the other side.

Military, economic and political attention needs to be given to the Middle East. If Russia should sweep over the oil fields, we could prevent her from getting oil. But we would be without that oil ourselves, and we need it. If we have a sound policy towards the Arab world, it isn't known by our legations and attaches. The American people as a whole are quite unaware of this shameful neglect. We need the friendship of the Arab countries and for the most part the Arab countries have wanted to be friends with us. Constructive action is long over-due.

Spare Parts. All the way from Southeast Asia to the Mediterranean there are local airlines using American equipment and starving for spare parts. Some operations have become quite unsafe for the lack of adequate parts. Yet the Department of State is blocking many efforts to get parts to this area, especially to the airlines operating in and out of Hong Kong.

Why? Because somebody sitting at a desk in Washington is afraid that airplane parts might find their way from Hong Kong into Communist China and thereby aid the enemy. This is an entirely unrealistic view. Even if Red China had more than a handful of airplanes, it doesn't have fuel to keep them operating. Furthermore, it is quite easy to exert a control over where those spare parts are going to be used.

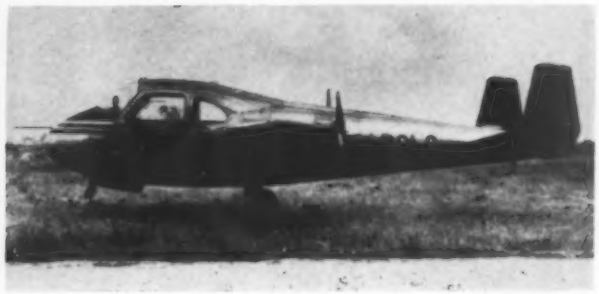
The airlines of Southeast Asia are performing a useful function in the non-Communist world. Failure to aid them is actually aiding Communist China, since transportation is the lifeblood of the area on the fringe of enemy territory. Blocking the shipment of spare parts and engines which would keep DC-3's and DC-4's in the air is a disgrace and anyone who knows the situation in Southeast Asia knows how ridiculous a few rigid controls can be. The panic and fears over shipments which might get to China are hardly excusable in this day and age. Let's keep the non-Communist airplanes flying.

WAYNE W. PARRISH.

New Foreign Plane Models

Breguet 960—An artist's sketch of the Breguet 960, newly designed French naval strike fighter powered by a Hispano-Suiza "Nene" in the tail and an Armstrong Siddeley "Mamba" in the nose. The 10-ton 960 will use the Nene for climb and combat but normally cruise on the Mamba. Top speed 559 or on Mamba alone 233 mph.

D. H. "Chipmunk"—This is the latest of the Chipmunk series aircraft, designed and built by de Havilland of Canada. Some 600 of the new series, which features a one-section cockpit canopy, will be built by the parent de Havilland company in Britain for preliminary training applications. Thirty-seven have been supplied to Royal Flying Clubs by RCAF to train reserve officers.



Caproni CA.193—An Italian design, the Caproni Aeronautica Bergamasca CA.193 is a twin-engine, all-metal aircraft powered by two 150-horsepower Walter "Minor 6" engines or two 155-horsepower Blackburn "Cirrus Major 3" engines. Fitted with retractable gear, it grosses 4,185 pounds, has cruise speed of 170, top speed of 186. Landing speed is 65 mph. Five to six place.

Project C—This first Australian jet of original design was built by the government aircraft factory as a high-speed, radio-controlled target. Span is less than 20 feet, length 22 feet. Power is by an 1,100-pound-thrust Armstrong Siddeley "Adder" jet engine. Production version will use the AS Viper, an expendable jet engine.

Fouga "Cyclope"—A one-place, jet-powered aircraft, latest in series of light jets by Fouga & Co., France. This aerobatic aircraft is powered by a Turbomeca "Pimene" jet engine. The Cyclope grosses 1,219 pounds. Top speed is 217 miles per hour. Ceiling is 27,880 feet. The "Pimene" delivers 242 pounds jet thrust.

B.F.Goodrich

Hotter heating pad keeps boom on the beam

THE FLYING BOOM, Boeing's new development for in-flight refueling, has to fly straight to its mark from tanker to bomber. Even near misses are out.

One big problem stood in the way of the boom's operating "on the beam" during the refueling operation. Ice, forming on the vee-shaped ruddevators that control the boom's flight, would throw accuracy for a loop.

Boeing engineers decided to make the leading edge of the ruddevators so hot that water droplets hitting it would evaporate before they could freeze. They knew that B. F. Goodrich had developed electric rubber to concentrate heat at the spots where heat was needed. The question they put to BFG engineers was whether the rubber could supply more intense heat and still stand up in service.

To answer this, B. F. Goodrich came up with an electric rubber pad built with a new, high temperature flexible material. It has a core of resistance wires that carry higher power to produce more heat.

Used on the Air Force's new prototype Boeing KC-97A tanker, the BFG electric rubber pad keeps ice from forming on the Flying Boom, makes accurate control possible.

Standard-construction B. F. Goodrich electric rubber is doing a successful anti-icing job on airplane wings, propellers, air intakes, jet cowls, hydraulic lines, water tanks and many other aircraft parts. The new high-temperature construction offers advantages where extreme heat is needed.

If you have an icing problem—or any other that rubber might solve—get in touch with the leader in rubber research and engineering—B. F. Goodrich *The B. F. Goodrich Company, Aeronautical Division, Akron, Ohio.*

B.F.Goodrich

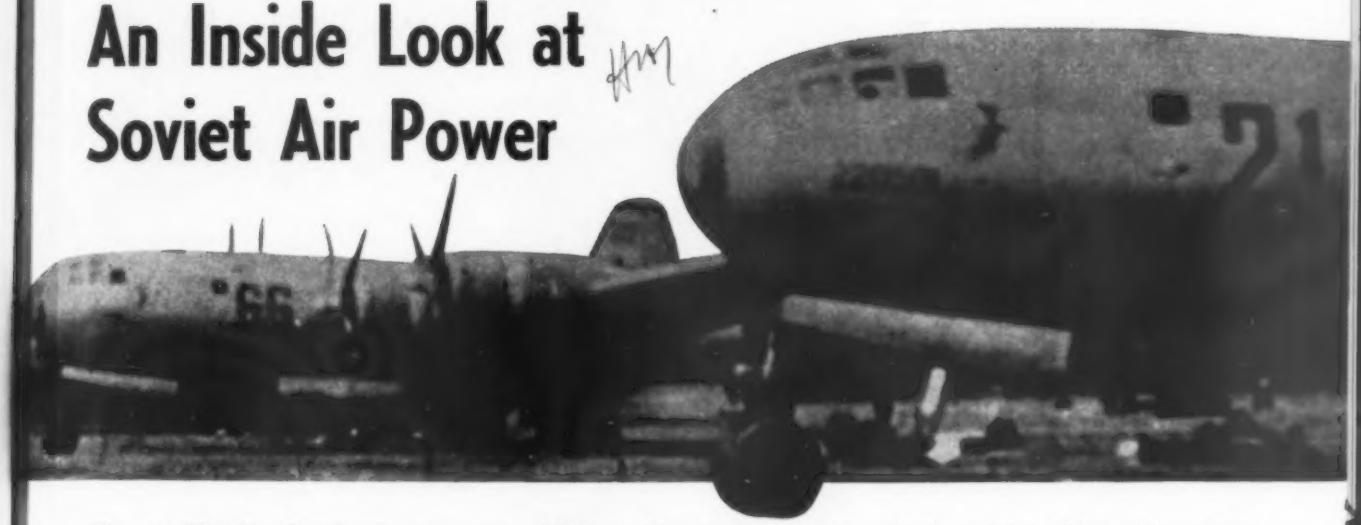
FIRST IN RUBBER

ESTABLISHED JUNE 1, 1937

American Aviation

VOLUME 14 NUMBER 33

An Inside Look at Soviet Air Power



The world-wide threat of communist aggression and war has, in recent months, inspired a number of guess-work stories in the press about Russia's military capabilities. These stories have created a misconception of Russia's power, particularly air power which has been rather consistently over-valued.

To help correct this misconception of Russia's air might AMERICAN AVIATION *presents here what it considers the most accurate information available as to Russia's productive and tactical air potential*

This material has been culled over a period of months from official and private sources both here and abroad. The editors have confidence in the authenticity of the materials and believe it will do much to dispell the exaggerated pessimism held by many toward Russian air striking power.

AN ANALYSIS of the Soviet Union's ability to wage an air war reveals the following:

• **The USSR is outproducing** the United States in aircraft, but not on the tremendous scale generally believed. Actually, the Soviet Union is turning out little more than twice as many planes as we are.

• In **maximum aircraft production potential**, the U. S. is well ahead of the USSR.

• **The USSR is well defended** against air attack and penetration to industrial targets would be difficult. However, no target in the USSR is out of the range of USAF bombers provided we are able to maintain the ring of overseas bases we now have.

• **The USSR's ability to strike** at our production centers is far inferior to our ability to hit Russian targets. The Soviet Air Force is basically a tactical air force designed to work with ground troops and strategic bombing has been subordinated.

• **Soviet jet fighters** are about on a par with ours, but they are no better. Although some observers believe that the swept-wing MIG-15 operating in Korea is a second line airplane and that there are a number of secret types with better performance in Russia proper, the MIG is actually the best available to the Red Air Force now.

Aircraft Production

The current rate of production in the USSR is 8,500 military front line planes a year, far lower than the exaggerated figures ranging up to 50,000 a year which have appeared in print. The production is heavily concentrated in jet fighters—about 70%. It is further concentrated in two main types, the MIGoyan-15, or MIG, and the LAVochkin-17, another swept-wing jet. Production of these two types alone is almost 65% of all the aircraft produced in the USSR. The production rate of the MIG is 3,500 planes a year, the LAV-17 rate is 2,000 a year. Here is a breakdown of the USSR's production by types:

Bombers	250 a year
Fighters	6,000 a year
Transports	1,250 a year
Trainers and other types	1,000 a year
	8,500

These are the Russian aircraft types currently in production:

The MIGoyan-15, a swept-wing single seat jet fighter with performance comparable to that of our own North American F-86. Designed primarily for interception.

The LAVochkin-17, also a swept-wing single seat jet, similar in general appearance to the MIG, but of later vintage. It is just now getting into operational service in numbers. Though basically an interceptor, it is also believed to be slated for troop support work with the tactical air armies.

The YAKovlev-17, another jet, similar in appearance to the USAF's Republic F-84 Thunderjet. A straight-wing type, it nonetheless has a speed of well over 600 miles per hour.

The YAKovlev-15, an earlier jet with a maximum speed of not much more than 500 miles per hour.

The TUpolev-4, a four-engined bomber copy of our own Boeing B-29, with a general performance comparable to that of a late model B-29 but not up to B-50 standards.

The TUpolev-70, transport version of the B-29.

The ILyushin-12, a twin-engined airline type transport.

The ILyushin-18, a four-engined heavy transport.

The aircraft manufacturing industry is scattered throughout the Soviet Union but the major concentration appears to be in the Moscow area. The main production centers prior to World War II (and still operating) were Moscow, Leningrad, Taganrog, Voronezh, Zaporozshe, Kharkov, Gorki, Saratov and Kasan (see map). In recent years, however, the trend has been to build new facilities east of the Urals and new production cen-

ters have sprung up in Tashkent, Irkutsk, Semionovka, Tomsk, Novosibirsk, Swerdlovsk, and Khabarovsk. Post-war plants have also been built in Kiev, Rostov, Kuibischev, Tiflis, Aksha and Chernigovka.

The producibility of the USSR's aircraft industry under mobilization is estimated at 60,000 planes a year, well under our all-out capabilities. Plant space, manpower and materials are available for a production program of that order. Production of aluminum, the most important single material in aircraft production, topped 160,000,000 tons last year. Steel production is on the order of 25,000,000 tons a year. The most critical item in Russia's aviation program appears to be the availability of petroleum products, especially high-octane aviation gasoline, an item which points up the importance of the petroleum deposits available in the Iran-Saudi Arabia area to Russia's ability to wage a war.

Technologically speaking, the western powers are superior to the Russians. This is especially true in the electronics field, where both the U. S. and Great Britain enjoyed a wide war-time margin of superiority over the Russians and the Germans, a gap which has been widened rather than closed in recent years. Jet engine progress in the U. S. and U. K. has been much more rapid than it has in the USSR. In most fields, however, the USSR is reducing our wartime margin of technological superiority.

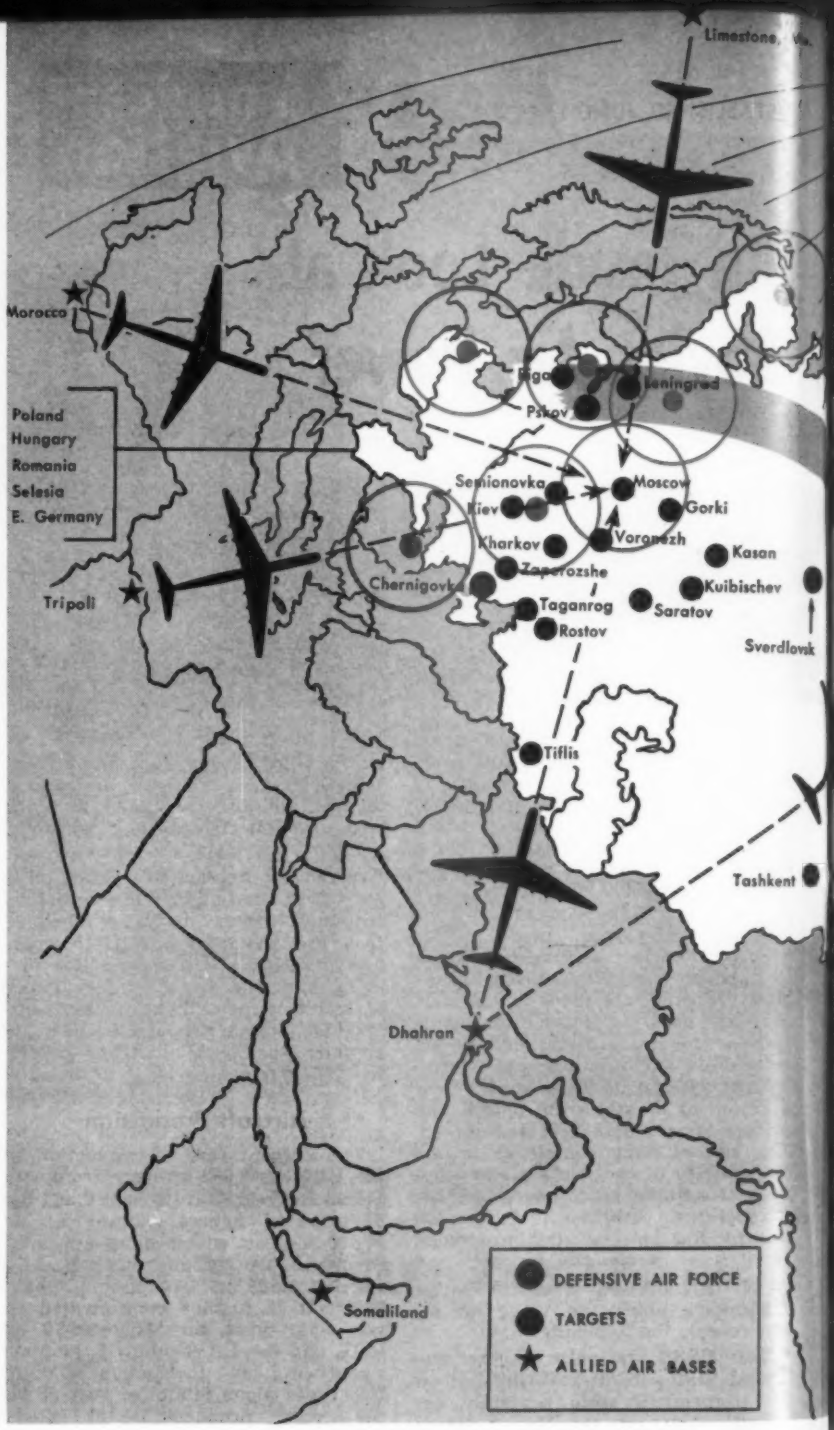
Soviet Air Force

The USSR's air force is composed of about a dozen tactical air armies concentrated chiefly in the west, an Arctic Perimeter Interception Force, an independent mobile interceptor force and a strategic bombing force. The latter force has been subordinated, the Soviet concept of the use of air power being basically the old "artillery extension" theory in which the major use of the airplane is to assist ground armies on the move. Thus, at present, the Soviet Air Force has only 800 strategic bombers of the TUpolev-4 type out of a total force of about 18,000 operational aircraft.

The bulk of the aircraft are concentrated in the tactical air armies, which have 1,200 planes each. The composition of a typical air army is as follows: 400 jet fighters, 400 propeller-driven fighter bombers, 200 medium attack bombers, 160 transports and 40 liaison or utility aircraft. These air armies are basically offensive in character but would undoubtedly become defense forces in a strategic air war against the USSR. They are located chiefly in western Russia (see map).

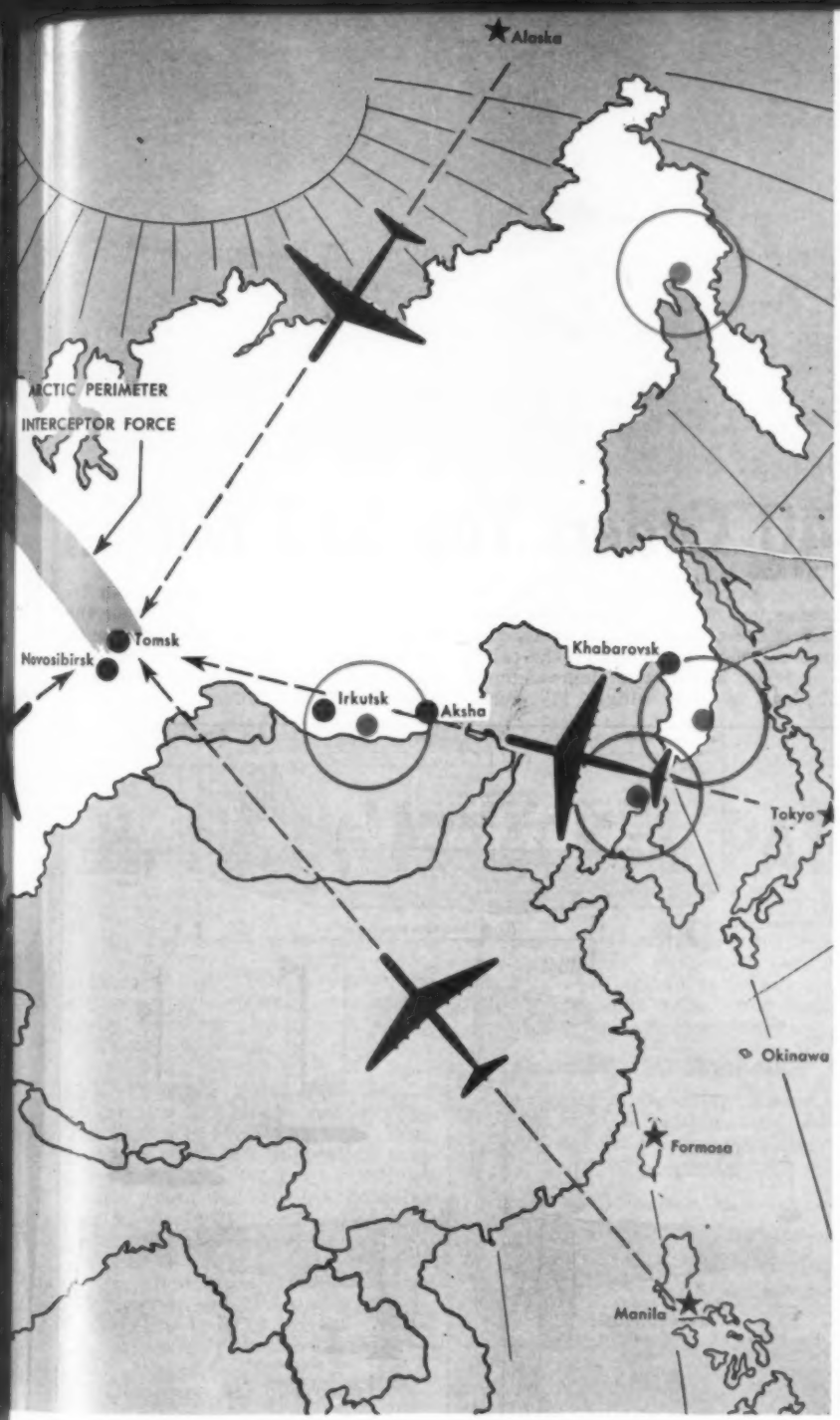
Very conscious of the polar concept of air warfare, the Soviet Air Force organized the Arctic Perimeter Interceptor Force as an air defense barrier against attack from the North Pole. This force, with a ring of bases stretching in an arc from Latvia to the northeastern tip of China, is composed chiefly of MIG-15 type aircraft.

Supplementing the Arctic Perimeter Interceptor Force is another independent mobile interceptor force of about 1,000 MIG-15's whose job it is to shift with the pattern of the air war and cover areas under attack not otherwise defended. There is also



Soviet Aircraft Centers Are D

This map illustrates the problem of neutralizing the USSR's production in case of wa. From outlying bases, all of which we now have, any Russian target is within B-36 rang. The 20 towns shown here undoubtedly rank high on the Air Force's target li —the are the aircraft manufacturing centers. The red circles are the Soviet Air Force's tactical air armies, each of which covers a defensive radius of about 500 miles. The he y a



lt Targets But Can be Reached

...ctic Perimeter Interceptor force, an air defense group composed of about 1,000 MIG-15 jet fighters. Not shown on the map is another MIG force, the mobile interceptor force which shifts to meet attack from any direction. Obviously, getting to Russian targets would be a difficult job, but possible. The map points up the advantages of maintaining overseas bases like Dhahran and Tripoli instead of longer over-the-pole operations.

a special defense force assigned to cover the immediate Moscow area.

As might be expected the strategic bombing force is located in the north, with some units in the Moscow area and others in the far northeastern corner of Siberia. Its aircraft, the TU-4's, are credited with an operational radius of just under 2,000 miles, not great enough to carry on a sustained strategic bombing attack against our industrial areas without the use of some sort of in-flight refueling equipment.

The Russian policy of subordinating strategic bombing to tactical aviation has left the Red Air Force with no replacement for the TU-4 in the long range category. Although there are indications that steps are now being taken to bolster the strategic bombing force in numbers, the USSR finds itself in a difficult position as far as its ability to neutralize our production is concerned.

The only weapon in sight with the range to carry on an intercontinental air war is a six-engined prototype of the B-36 order which won't be flying for months to come and which will not be in production for at least two years.

The Strategic Picture

The accompanying map illustrates the problem of neutralizing the USSR's aircraft production. It can be reasonably assumed that, in an all-out war with Russia, we would not be deprived overnight of our overseas air bases. From these bases —places like London, Casablanca, Tripoli, Dhahran, Manila and Tokyo —aircraft of B-36 range capabilities (about 3,500 miles operational radius) can strike any target in the USSR, either on normal two-way missions or on shuttle missions employing an alternate base.

However, as is evident from the disposition of the Soviet Air Force's defenses on the map, it will not be easy. For instance, a bomber en route to Moscow from Limestone, Me., would probably be subjected to air attack almost constantly for the last thousand miles to the target. Using the polar routes, while advantageous from the standpoint of distance, has its disadvantages in the combination of air defense forces the USSR is able to muster in the north —the Arctic Perimeter Interceptor Force, the mobile interceptor force and most of the tactical air armies.

The map also points up the necessity of maintaining and defending the ring of overseas bases. It is obvious how much closer are bases like Dhahran and Tripoli to Russia's industrial concentration in the Moscow-Kuibischev area than, say, Alaska, and the closer to the target, the better the chance of success. A ring of bases also affords the maximum in the use of deception for penetrating Russia's defenses.

In summing up, it might be said that from the standpoint of current production, potential production, ability to wage a strategic air war with the USSR, everything, in fact, but force in being, the U. S. is in much better relative position than is generally assumed.

New Convair 340 Orders Top $33 Million

THE 52 Convair airplanes on order by United Air Lines, Braniff Airways and Arabian American Oil Co. (AMERICAN AVIATION, Feb. 5) are new models of the Convair Liner known as the Convair 340. More recently Continental Airlines has also ordered seven 340's and The Texas Co. has ordered one. This brings the backlog for the new Convair to 60 airplanes, and based on the $16,500,000 announced price of the United purchase, a dollar volume over $33 million. Continental has an option on three additional aircraft.

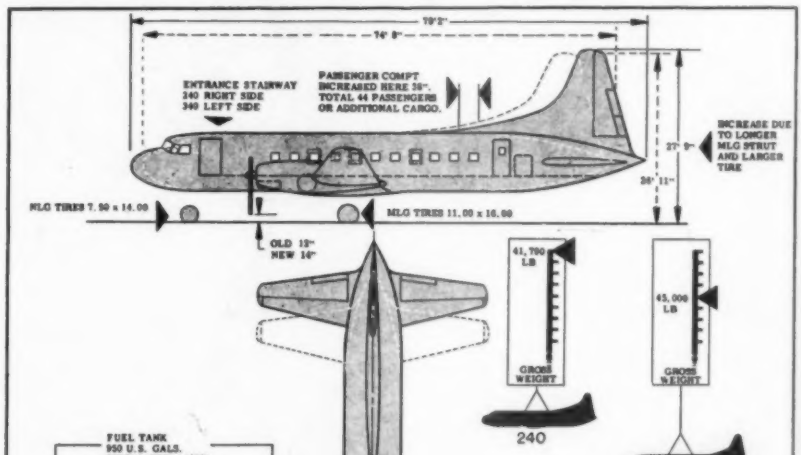
Most of the pertinent characteristics of the Convair 340, along with comparable figures for the 240 series aircraft, are shown on the accompanying drawings taken from the manufacturer's presentation to other airlines. Principal changes are in the overall dimensions with wing span being increased by 13 feet, 11 inches to 105 feet, 8 inches and fuselage length growing five feet, six inches to 79 feet, 2 inches.

Gross Weight Upped

Gross weight of the model 340 is 45,000 pounds, up 3,210 pounds over the earlier models. Empty operating weight, including airline type radio and buffet equipment, will be 29,372 pounds and maximum landing weight is 44,500 pounds. Payload is limited to 12,012 pounds with zero fuel weight.

Powered by two Pratt & Whitney R-2800 CB16 engines, the Convair 340 will operate over a 1,000-mile route segment cruising at 290 miles per hour true airspeed with 7,700 pounds' payload. This assumes a 1,200-pound fuel reserve, 20,000-foot altitude and no wind, with the engines producing 1,350 horsepower each. Normal rated power is 1,800 horsepower. At 500 miles' range with same reserve payload would be 10,000 pounds. With 20-degree flaps and full gross weight, sea-level takeoff calls for a 4,000-foot runway.

Other principal changes in the 340 include use of a left-hand-side front loading door; 44 passenger seats; forward cargo compartment on the cabin floor level; almost two degrees more dihedral in the wings; 11 inches greater tail height, brought about by larger tires and longer struts on the main landing gear; nacelles seven inches longer than on the 240, and an increase in fuel tank capacity from 1,000 to 1,900 gallons.



COMPARISON MODELS 240 AND 340
CONVAIR LINER

Navy's carrier-based sub-hunting team. Above, the Grumman AF-2W, equipped with radar, which locates the sub, after which the AF-2S, the bomb-carrying "killer" member of the team takes over.

Wing span	60 feet	Height	16 feet	Gross weight	25,000 pounds
Length	43 feet	Top speed	over 300 miles per hour	Power plant	1 P&W R-2800 piston engine

A Look at U. S. Air Power

II—NAVY ATTACK & PATROL PLANES

By James J. Haggerty, Jr.

(Editor's Note: This is the second of a series of articles describing the current military plane types of the Air Force and Navy.)

BY THE Air Force definition of the word, it could probably be said that the Navy does not have "bombers," but the Navy does have a number of aircraft types whose mission might be called a bombing mission, although the Navy prefers the terms "attack" and "patrol."

In general terms, the Navy's bombing aircraft may be classified in two major categories: those which operate from the decks of aircraft carriers and those which are land-based.

Douglas AD Skyraider

There are four major types of carrier-based attack aircraft now in production or in operational service. The oldest, from the standpoint of length of service, is the Douglas AD Skyraider. The AD comes in several versions, from the original AD-1 to the new model, the AD-5. Basically it is a single-seat, low-wing monoplane, but some versions, designed for special purposes, are fitted for three seats. The radar-equipped multi-seat versions are used chiefly for night operations for sub-detection. The AD is a versatile aircraft—it may be used as a short-range sub-hunter or anti-shipping weapon, or as an attack bomber against shore installations. It can bomb either from medium altitude or as a dive bomber.

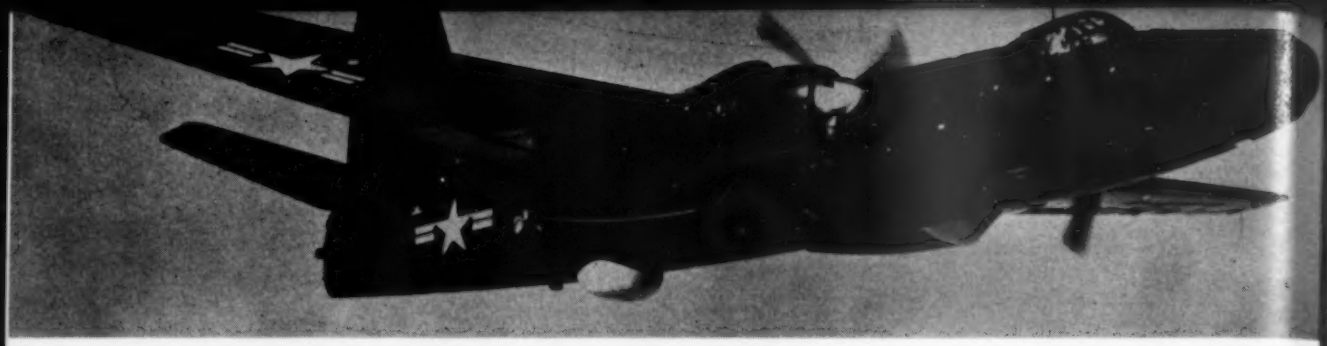
Douglas A2D Skyshark

The newest of the attack planes is the AD's younger brother, the Douglas A2D, not yet in operational service, but in early production stages. The A2D is larger, heavier, longer ranging, considerably faster and capable of carrying a heavier bomb load than its predecessor, but its mission will be basically the same. The A2D will introduce turboprop power to the Navy's carrier-borne fleet.

Both the AD and the A2D are in

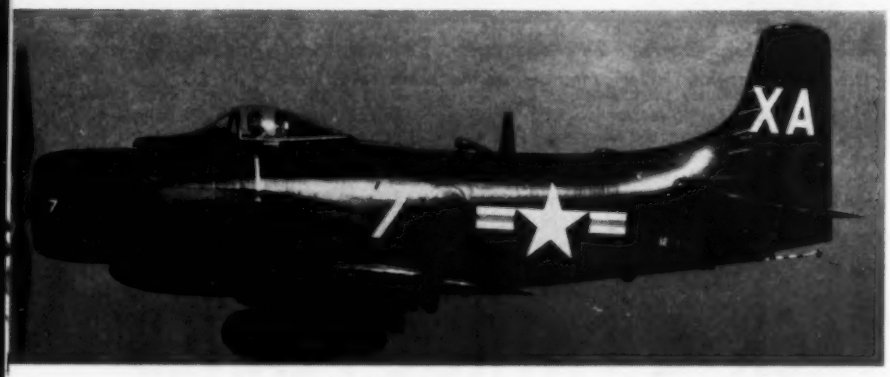
Lockheed P2V Neptune, holder of the world's distance record, specially designed to find and destroy "snorkel" type submarines.

Wing span	100 feet	Top speed	about 350 miles per hour
Length	78 feet	Gross weight	65,000 pounds
Height	28 feet	Power plants	2 Wright R-3350



Martin P4M-1 Mercator, four-engined patrol bomber. The two "invisible" engines, both jets, are housed in the nacelles behind the piston engines.

Wing span	114 feet	Height	29 feet 9 inches
Length	85 feet 2 inches	Top speed	over 350 miles per hour
Gross weight	over 80,000 pounds		
Power plants	2 P&W R-4360 piston engines and 2 Allison J-33 jets		



Douglas AD Skyraider, carrier-based attack bomber.

Wing span	50 feet	Top speed	over 350 miles per hour
Length	39 feet 4 inches	Gross weight	20,000 pounds
Height	15 feet 10 inches	Power plant	1 Wright R-3350

production at Douglas' El Segundo, Calif., plant.

Grumman AF Guardian

The Grumman AF Guardian is actually two planes. The current models are the AF-2W and the AF-2S, similar in general configuration except for the bulging radome beneath the fuselage of the AF-2W. Both are single-seat, single-engined aircraft. They work as an antisubmarine hunter-killer team — the AF-2W locates the sub with its electronic equipment, then the AF-2S, equipped with bombs and guns, moves in to destroy it. The AF-2S is not a dive bomber and was specifically designed for the anti-submarine mission; it is conceivable, however, that it could be used as a level-flight bomber against shipping or shore installations. Both models are now in production at Grumman's Bethpage, L. I., plant.

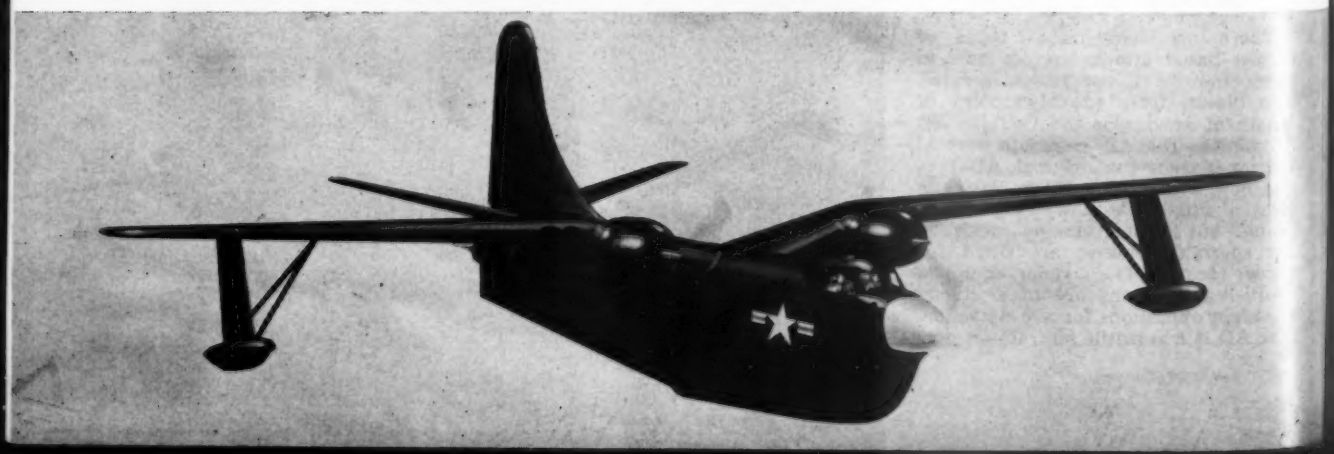
North American AJ-1

Largest of the carrier-based attack aircraft is the North American AJ-1, a three-engined, 26-ton bomber which carries a three-man crew. The AJ-1 has a unique power plant arrangement, with two piston engines in wing nacelles and a jet engine for additional takeoff and combat power in the rear of the fuselage. Equipped with electronic gear, the AJ-1 can also be a sub-hunter, with a greater radius of action from the carrier deck than the Grumman Guardian. However, its large bomb bay permits an important secondary mission: it can carry an atom bomb from a carrier deck to a shore target to supplement Air Force land bombing operations should it be called upon to do so. The AJ is in production at North American Aviation's Los Angeles, Calif., plant.

The Navy has three long-range patrol bomber types in production, two of them land-based and the third water-based. The mission of all three is basically the same. Operating from shore bases (or harbor bases) they range well beyond the limits of the carrier-based planes on reconnaissance or sub-hunting missions. All are fitted with electronic gear for

The Martin P5M-1, Marlin, twin-engined antisubmarine patrol bomber.

Wing span	118 feet	Height	37 feet
Length	91 feet	Top speed	over 250 miles per hour
Gross weight	60,000 pounds		
Power plants	2 Wright R-3350		

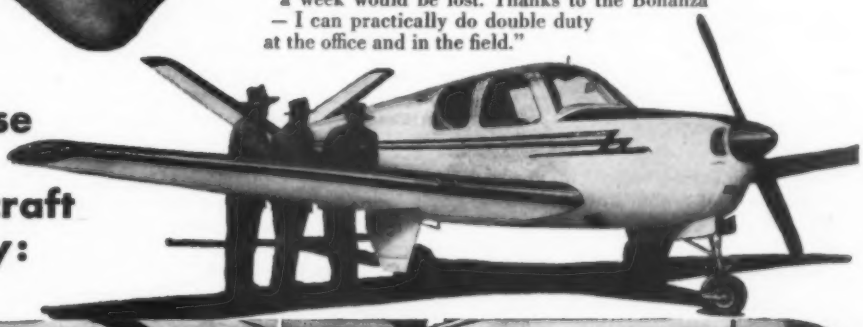


"R. D. Ezell must be twins!"

So say branch managers about the executive vice president and general manager of the Roy C. Whayne Supply Co. at Louisville. It's because Mr. Ezell really gets around since his company acquired a Beechcraft Bonanza.

The Whayne Supply Co. operates a huge road machinery business, with branches in Evansville, Indiana; Ashland and Paducah, Kentucky, so plenty of field trips are needed. "The Bonanza is a marvelous engineering achievement — completely dependable, rugged, and fast. I make this trip to all three branches and am away from Louisville only one night. By other means of transportation a week would be lost. Thanks to the Bonanza — I can practically do double duty at the office and in the field."

Check these reasons for Beechcraft superiority:



B

C

A ROOM APLENTY for four big men in the spacious cabin. Front seats even more comfortable; new two-position reclining rear seat. Color and upholstery styling all new, too.

B SAFETY—RUGGEDNESS. Low, cross-braced landing gear is wide and long. Rough landings are smoothed. In flight you cruise, using only 65% of the engine's rated take-off power. *Extra* safety margin!

C SPEED and top performance. Take-off horsepower now 205 at 2,600 rpm; new Beechcraft metal propeller has greater aerodynamic efficiency. Short fields no problem! And there's greater economy in fuel consumption, too.

- For full details on the new Model C35 Bonanza, see your Beechcraft distributor, or write Beech Aircraft Corporation, Wichita, Kansas, U.S.A.
- Higher top speed: 190 mph
- Higher cruising speed: 175 mph
- Longer range: 775 miles
- Better fuel economy: 19.9 mpg

Beechcraft

BONANZA

BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS

Latest in attack bombers, the turboprop-powered Douglas A2D, which combines fighter performance with the load-carrying capabilities of larger aircraft.

Wing span	50 feet	Top speed	over 525 miles per hour
Length	41 feet	Gross weight	23,500 pounds
Height	17 feet	Power plant	1 Allison T-40 turboprop

spotting submarines and all are equipped to make the kill without outside aid.

Lockheed P2V Neptune

The production concentration is on the Lockheed P2V Neptune, which carries the most elaborate radar equipment and is specially designed to hunt down the "snorkel" or underwater breathing subs. An extremely long-ranging plane, the P2V is powered by two piston engines. It can carry sixteen 500-pound bombs on a normal-length mission. It is manned by a crew of seven.

Focal point of its detection equipment is the radome which protrudes below the fuselage between the wings. There are several versions in service, the latest being the P2V-5, which has compound engines for even greater range. A stripped-down model of the P2V holds the world's distance record—11,236 miles from Perth, Australia, to Columbus, O. P2V's are in production at Lockheed's Burbank, Calif., plant.

Martin P4M

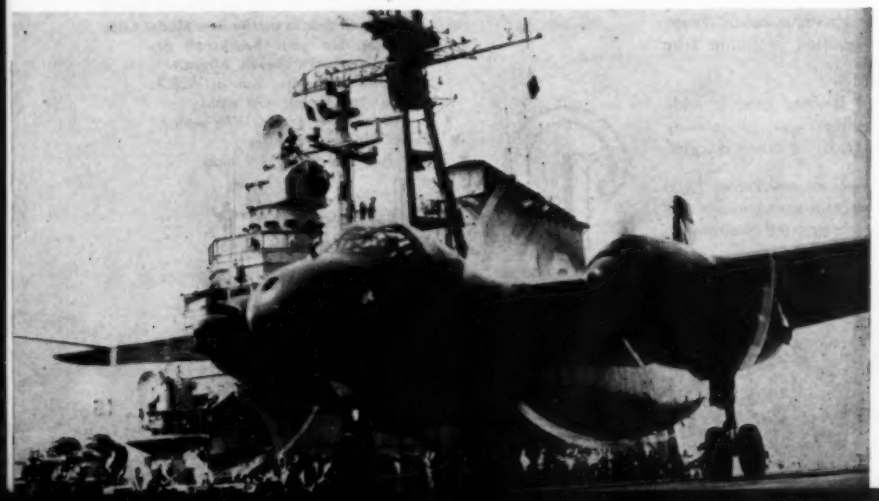
The Martin P4M supplements the work of the P2V. It is a four-engined aircraft, though at first glance it appears to be a twin-engined plane. It has two jet engines housed in nacelles below and behind the normal piston engines. It is in production at the Middle River, Md., plant of The Glenn L. Martin Co.

The last of the Navy's bombing types is the Martin P5M, a twin-engined gull-wing seaplane, heavily laden with electronic gear and designed primarily for anti-submarine work. The P5M incorporates the latest in seaplane design, with a long "afterbody" hull designed to permit safe landings and takeoffs on rough water and to reduce takeoff distance. It carries a crew of seven. The P5M is also in production at Martin's Middle River plant.

The Navy has one other patrol bomber type, the Convair XP5Y-1, a four-engined turboprop seaplane. However, the Navy has not indicated whether it will go into production as a patrol bomber. A transport version of the same plane, the R3Y-1, has been ordered into limited production, so the Convair boat will be treated as a transport in this series.

Heaviest carrier-based attack bomber, the three-engined North American AJ-1. The hidden engine is a jet mounted in the rear of the fuselage.

Wing span	75 feet	Top speed	420 miles per hour with jet
Length	63 feet	Power plants	2 P&W R-2800 piston engines and 1 Allison J-33 jet
Height	20 feet		
Gross weight	53,000 pounds		



Aviation Calendar

March 12-13—Third annual short course on uses of aerial equipment in agriculture, Purdue University, West Lafayette, Ind.

March 12-14—Annual Meeting of Airport Division Board of Directors American Road Builders Association, Schroeder Hotel, Milwaukee, Wisc.

March 15-17—19th Annual Meeting of American Society of Tool Engineers, Hotel New Yorker, New York, N. Y.

March 16—Institute of the Aeronautical Sciences sixth annual flight propulsion meeting, Hotel Carter, Cleveland, O.

March 19-22—Institute of Radio Engineers National Convention, Waldorf Astoria Hotel, New York, N. Y.

April 3-6—Greater New York Safety Council annual convention and exposition, Statler and Governor Clinton Hotels, New York, N. Y. (Aviation session, April 6, Statler).

April 4-6—CAA Airports Advisory Committee meeting, Du Pont Hotel, Wilmington, Del.

April 16-18—Society of Automotive Engineers aeronautic meeting and aircraft engineering display, Hotel Statler, New York, N. Y.

April 19-21—Airport Operators Council annual meeting, Hotel Peabody, Memphis, Tenn.

April 23-26—American Association of Airport Executives annual meeting, Minneapolis, Minn.

April 24-26—Air Transport Association annual engineering and maintenance conference, Drake Hotel, Chicago, Ill.

May 12-13—Airlines Medical Directors Association 8th annual meeting, Hotel Shirley Savoy, Denver, Colo.

May 13-14—Airlines Medical Examiners Association 4th annual meeting, Hotel Shirley Savoy, Denver, Colo.

May 14-16—Aero Medical Association 22nd annual meeting, Hotel Shirley Savoy, Denver, Colo.

May 21-24—Tenth Annual Conference of Society of Aeronautical Weight Engineers, Hotel Jefferson, St. Louis, Mo.

May 23-24—American Society for Quality Control fifth annual convention, Hotel Cleveland, Cleveland, O.

May 23-25—Institute of Radio Engineers Technical Conference on Airborne Electronics, Biltmore Hotel, Dayton, O.

May 24-25—Society of the Plastics Industry annual national meeting, Greenbrier Hotel, White Sulphur Springs, W. Va.

International

Feb. 20—ICAO Operations Division meeting, Montreal.

March —World Meteorological Organization Congress, Paris.

April 3—ICAO Communications Division meeting, Montreal.

June 15-July 1—1951 Paris International Aircraft Exhibition, Grand Palais and Paris Airport, Paris.

SIX TRANSCONTINENTAL REQUESTS DENIED:

CAB Interchange Policy May End Major New Route Awards

By WILLIAM V. HENZEY

THE Civil Aeronautics Board has clamped down on future trunk-line route expansion in this country and has indicated strongly to the domestic industry that it advocates equipment interchange operations to meet the needs for new or additional airline service.

As a result, CAB and a large portion of the trunk-line industry will center immediate attention on development of new interchange services under which present route structures are left undisturbed, but one carrier, for example, may operate its planes over designated routes of another and vice versa.

Signalling the new policy was a recent Board decision in which six domestic airlines were turned down on long-standing applications for new southern routes, three of which were for transcontinental service.

Board used the occasion as a springboard for warning the industry that individual applicants face "a major, if not insurmountable, task" in seeking approval of future route proposals. As an alternative, it urged airlines to give serious consideration to interchange operations as a means of meeting future air service requirements.

Reasons underlying the policy switch are varied. First, CAB feels that too much route mileage has been doled out in past resulting, in some cases, in excessive competition. Also, it reasons that technological developments have succeeded in making available greater capacity over established routes than necessary at present fare levels.

Industry exponents of interchanges, of course, agree with the Board. But in several cases where lines faced possible denial of route extension applications there have been charges that alternative interchange proposals are merely defensive gestures made to forestall additional competition.

Two Now Operating

At present, there are two active interchange operations. One is a southern transcontinental service performed by Delta Air Lines and American Airlines. Under it, passengers may board Delta's planes at Miami and fly through to the west coast, although that carrier's route authorization extends only to Dallas/Ft. Worth in the west. Similarly, American's planes, boarded in San Francisco or Los Angeles, may continue through to Miami, although from Dallas east, Delta's routes are being utilized.

CAB, however, proposes to eliminate the Atlanta-Miami segment of this operation if a three-carrier hookup can be arranged to utilize Nation Airlines' trans-Gulf route between Tampa and New Orleans. This would result in an operation over American's route between the west coast and Dallas, over Delta's between Dallas and New Orleans, and over National's beyond to Tampa and Miami. The present AA-Delta service would then be confined to an Atlanta/New Orleans-west coast operation.

The other operation now in effect, and in which no immediate changes are contemplated, is a Detroit-Miami service provided by Trans World Airlines and Delta. TWA offers up the Detroit-Cincinnati segment of its routes to Delta for return use of Delta's Cincinnati-Atlanta-Miami segment.

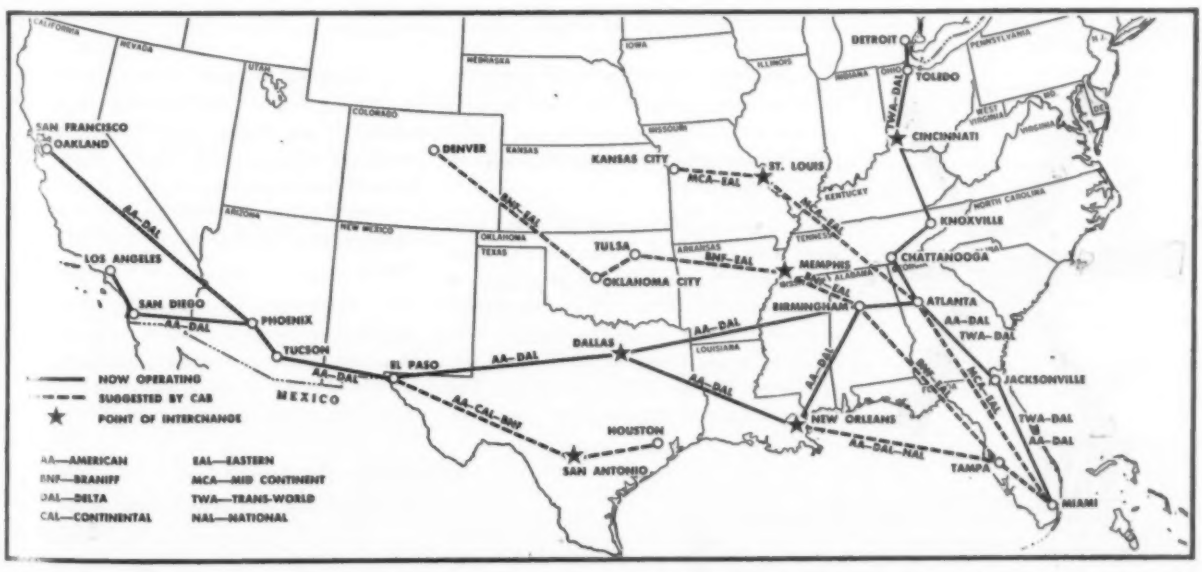
Currently, however, the greatest interest seems to center on the so-called "proposals" of CAB. In these, the Board suggests certain carriers to enter into "voluntary" arrangements for interchange between specific points.

There is nothing directly compulsory in the initial suggestions, but the Board has put all on notice that it has the power to compel domestic interchanges and would use such power if "voluntary" agreements are not filed within a specified time.

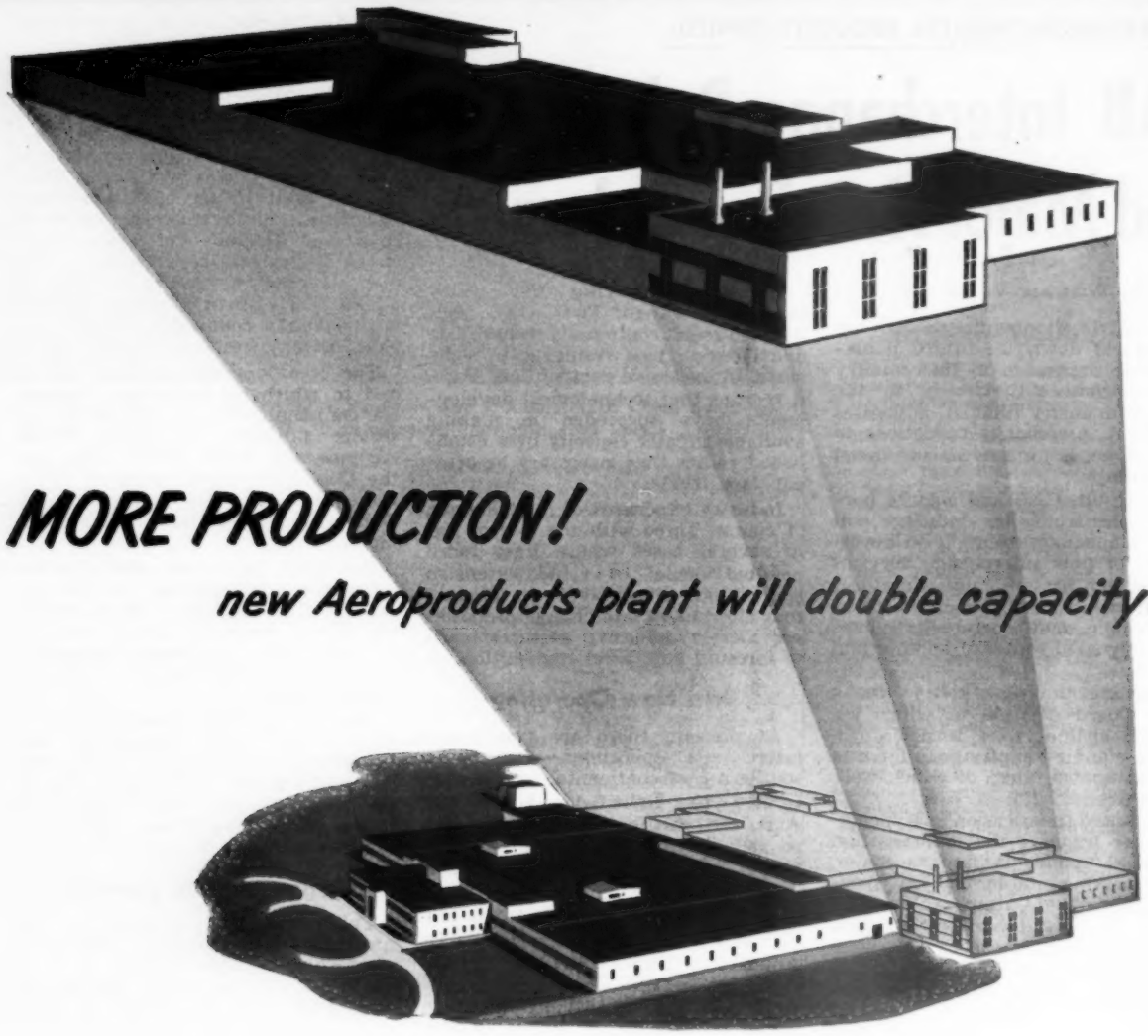
Suggested Interchanges

Falling in this category is the aforementioned American-Delta-National deal. Others involve:

(1) a Houston-San Antonio-El Paso-west coast interchange by Bra-



ILLUSTRATIVE of the extensive network of interchange routes now in effect and planned by CAB, this map also indicates the heavy concentration of initial operations in the south. Three other proposals also involve transportation to and from points in Texas. It should be noted that services over above routes may also be rendered to numerous intermediate points not listed on the map.



MORE PRODUCTION!

new Aeroproducts plant will double capacity!

Aeroproducts' huge expansion program is on its way. Ground has been broken for the new plant and *by the end of this year, present production capacity will be more than doubled!*

This rapid expansion of facilities will *more* than enable Aeroproducts to meet Air Force demands for Aeroprops on the giant Fairchild C-119 . . . *more* than meet the Navy's needs for turbine propellers on the Douglas A2D, the Consolidated Vultee R3Y and others. For Aeroproducts is planning for tomorrow . . . looking forward to a constantly increasing demand for its products. And whatever the future may hold, Aeroproducts will be ready—fully prepared to build propellers for giant new airliners . . . or for the swift-moving bombers, fighters and transports of our armed forces.

Yes, Aeroproducts, backed by the full facilities of General Motors, is ready to meet the demands of today... and is well on the way to meeting the accelerated demands tomorrow may bring.

GM GENERAL MOTORS

AEROPRODUCTS DIVISION
GENERAL MOTORS CORPORATION
DAYTON, OHIO

Building for today
Designing for tomorrow

Aeroproducts

niff Airways, Continental Air Lines, and American;

(2) a Kansas City-St. Louis-Miami service by Mid-Continent Airlines and

(3) a Denver-Memphis-Miami service by Braniff and Eastern.

There are other proposals, however, made by the carriers without CAB's indirect compulsion. TWA and Continental filed a joint application for approval of a west coast-Albuquerque-Houston operation which, among other things, is dependent upon an extension of Continental's present routes from San Antonio to Houston.

American and Braniff, ordered to work out a three-carrier deal with Continental, had previously submitted a two-carrier proposal for substantially the same operation, Houston to the west coast. Chicago and Southern Air Lines and TWA are awaiting action on a Houston-Pittsburgh-New York proposal. And, international proposals for New York-Latin America service have been submitted by Panagra and National and by Pan American and Eastern.

Emphasis on South

Significantly, every one of the domestic interchanges, active or proposed, involves service to and from the south. Because the northern part of the country is blanketed by certificated routes, including three transcontinental routes, the need for interchanges in that area appears to be at a minimum.

However, because the south lacks a one-carrier transcontinental service and because there is no direct link between major oil centers in south Texas and either Miami or California, it is apparent that that area would feel the effects of CAB's cut-off on route expansion and its strong support of interchange services.

Interchanges, nevertheless, may not be proposed indiscriminately if Board approval is to be expected. According to recently announced standards they should be so designed as to cause minimum interference with the existing route pattern, and therefore, should not be dependent upon new ute extensions.

Further, the service should be proided only over a reasonably direct ute, should leave substantially unsturbed the historic participation existing carriers in the traffic rved, and should not cause undue version.

The present American-Delta and VA-Delta operations are temporary will be those suggested by CAB. erefore, the permanency of the new licy is far from guaranteed and st estimates have interchange experiments occupying the next few ars, possibly to be followed by or ter-mingled with an era of mergers.

PRODUCTION SPOTLIGHT

Six-Day Week Spreading: For some time after the post-Korea expansion in the aircraft industry started, the five-day work week was still the rule in the industry, but now the work week is being extended in a number of cases. Latest are Boeing Airplane Co. and Fairchild Engine and Airplane Corp.'s Engine and Stratos Divisions. Boeing has put its Engineering Division employes in the Seattle and Renton, Wash., plants on a 48-hour six-day work week to meet accelerated USAF schedules. About 2,500 engineers are affected. One-third of the Seattle-Renton work force had previously gone on the 48-hour week. Fairchild inaugurated a 50-hour week for the two divisions, with office personnel going on a 45-hour schedule. Fairchild's Guided Missile Division is expected to start a longer work week in the near future.

Lockland Estimate Upped: General Electric Co. has revised its estimates of personnel expansion at the Lockland, O., jet engine assembly plant. Where previously the company thought 7,000 workers could handle the increased Lockland program, the company now feels it will take 10,000. Total plant facilities will be similarly boosted. Previously GE had announced that it was tripling its Lockland facilities. The Lockland plant turns out J-47 jet engines, very much in demand in the Air Force's aircraft procurement program.

Hughes Building at Tucson: Hughes Aircraft Co. will build a large new plant on its recently acquired 2,650-acre site at Tucson, Ariz., Airport. A clause in Hughes contract with the Tucson Airport Authority calls for a plant to cost not less than $5,000,000, but reports from the city state that the company is actually planning a 500,000-square-foot plant which will cost in the neighborhood of $7,500,000. It will be wholly financed by Hughes as a private venture. The plant, to be used for manufacture of electronic equipment, will probably employ between 8,000 and 10,000 when it reaches capacity in about two years.

Republic-IAM Contract: Republic Aviation Corp. has signed a contract with its newly appointed union, the International Association of Machinists, calling for a 15-cent-an-hour wage increase to all employes in the bargaining unit (about 5,000). The contract, which became effective February 17, calls for no strikes, walkouts, or lockouts by the union; it remains in force for one year with reopening provisions.

Boeing-Bristol Collaboration: Boeing Airplane Co. has signed an agreement with Bristol Aeroplane Co. for technical collaboration "in research and development work on certain defense projects of common interest." The nature of the work was not disclosed.

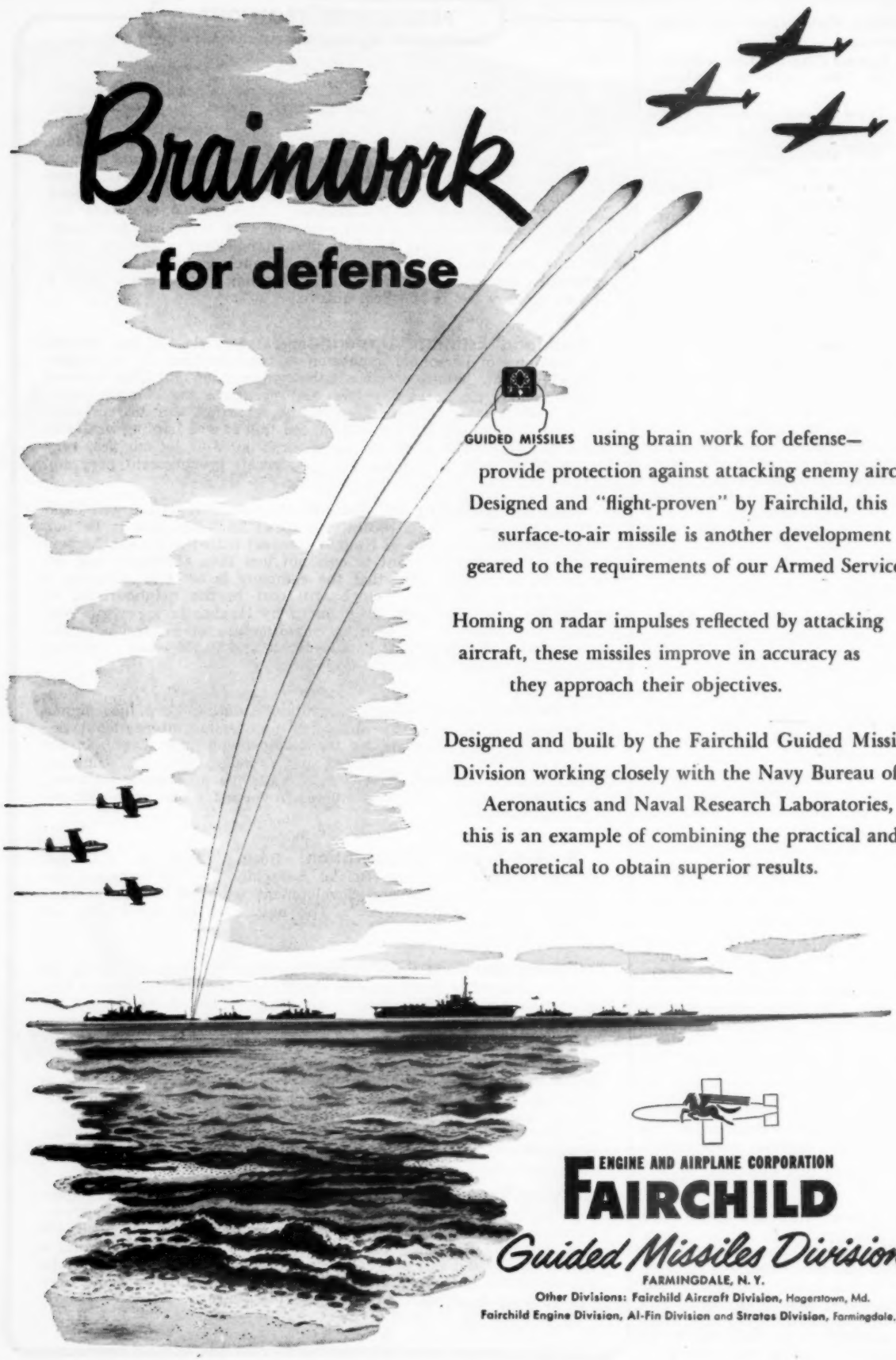
French Get First F-84's: First recipient of Republic F-84 jet fighters shipped to Europe under the Mutual Defense Assistance Program was France. The French Air Ministry stated that it had received 12 of the jets and would use them to form a tactical squadron.

Expanding Muroc: Large-scale expansion of Edwards Air Force Base, Muroc, Calif., the Air Force's desert flight test base, is planned by the USAF. Plans call for construction of an entire city at the base, including family residences, apartment areas and a business district. It is expected that the base will have an ultimate population of 28,000.

Flying Boat Buck: Consolidated Vultee Aircraft Corp. is nearing completion of a steel indoor twin-hull buck for simultaneous construction of two Navy R3Y-1 turboprop flying boats. The buck, 150 feet long and 65 feet wide, has three main working levels and a fourth for the tail assembly. Overhead monorails are installed along the top of the hull wells to transport completed hulls by crane from the buck to beaching cradles for final assembly.

—J. J. H.

Brainwork for defense



GUIDED MISSILES using brain work for defense—provide protection against attacking enemy aircraft. Designed and "flight-proven" by Fairchild, this surface-to-air missile is another development geared to the requirements of our Armed Services.

Homing on radar impulses reflected by attacking aircraft, these missiles improve in accuracy as they approach their objectives.

Designed and built by the Fairchild Guided Missiles Division working closely with the Navy Bureau of Aeronautics and Naval Research Laboratories, this is an example of combining the practical and theoretical to obtain superior results.

ENGINE AND AIRPLANE CORPORATION

FAIRCHILD

Guided Missiles Division

FARMINGDALE, N. Y.

Other Divisions: Fairchild Aircraft Division, Hagerstown, Md.
Fairchild Engine Division, Al-Fin Division and Stratos Division, Farmingdale, N.Y.

Mass-Production Process for Prop Blades

INITIAL production of one-piece, hollow steel propeller blades, made from steel billets by new developments in the hot extrusion of steel, is now under way at the Propeller Division of Curtiss-Wright Corp. The new process, developed by C-W in cooperation with the U. S. Air Force, promises to revolutionize mass production of propellers.

As experience with the machinery and process is gained on the propeller work, engineers believe that spectacular production gains can also be made with landing gear struts, helicopter masts, drive shafts, helicopter rotor-blade spars, and many non-aviation applications.

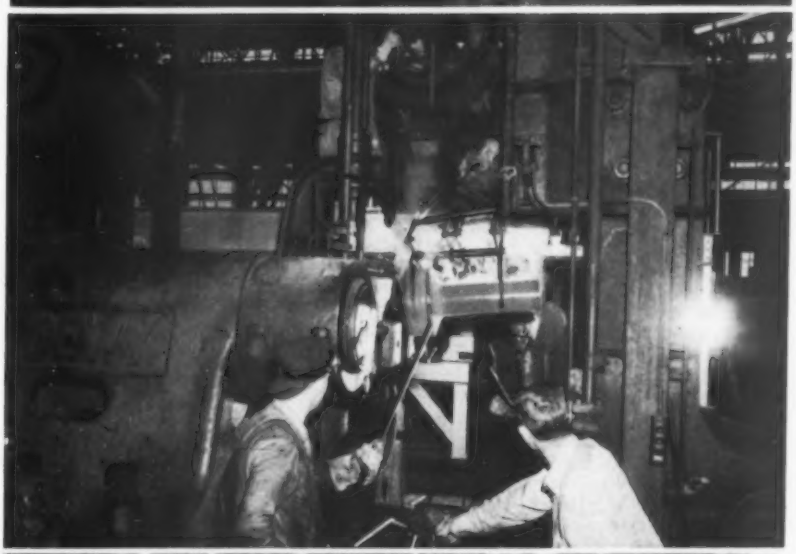
Hot extruding of metal is not new. Processes and machinery for extrusion of light metals in simple forms is an old art. But the application of hot extrusion to precision working of tough steel is new. The Germans were active in development work along this line and it is from their work that the current USAF interest grew.

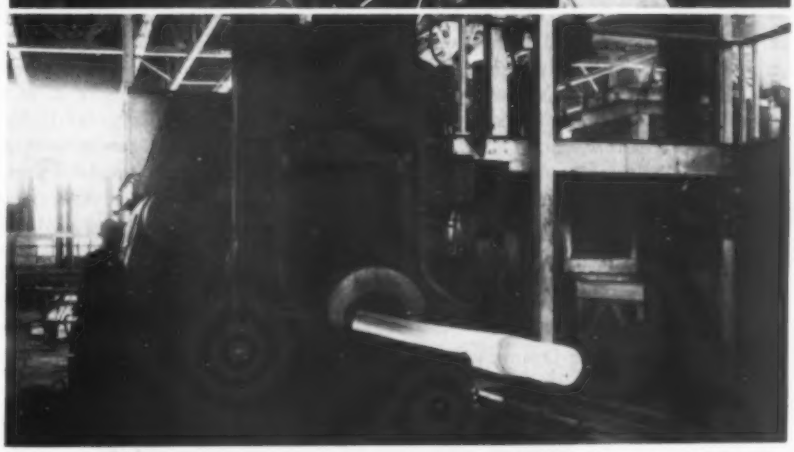
Until now hollow steel blades were fabricated by welding together two specially processed flat plates. These plates weighed some 750 pounds before processing. After welding they were formed to shape by methods requiring elaborate machinery and skilled personnel. At best this method is time consuming and wasteful of skilled labor, factory space and money.

Using the new process, Curtiss-Wright starts with a 400-pound billet of chrome-nickel-molybdenum steel, works it in a 5,500-ton Loewy press to form a 200-pound, 10-foot propeller blade tube. The entire operation, portions of which are shown in the accompanying pictures, is completed in three steps which take but a few minutes.

As removed from the press, the final product is a tapered wall, seamless round tube with solid ridges formed from shank to tip. This tube is then flattened and shaped to propeller dimensions. The solid ridges form the blade leading and trailing edges. In a few minutes' time, by almost completely mechanical processing, the basic blade is formed. This unit is then finished in the same manner as the conventional blades.

No small factor in the new process is its ability to produce a blade of improved quality and better strength-weight ratio, according to Curtiss-Wright, a factor which is particularly important in the growing field of turbine propellers. While the current production is on medium-size propeller blades because of extrusion press limitations, presses are now being designed to handle the larger blades.





CONVERSION of the 400-pound billet of steel into a seamless round propeller blade tube in a matter of minutes is shown in these photos. In the top photo the 400-pound billet is shown as it is started in the 5,500-ton press. The second photo shows it after the first two steps in extrusion are completed while the bottom photo is that of the white-hot blade tube as it leaves the press.

Butterflies of stainless steel!

Valves to control air and gas flow in jets and turboprops!

Of vital importance to designers and manufacturers of today's high-speed jet and turboprop aircraft engines are these AiResearch valves that use a *stainless steel reinforced butterfly with a resilient, compressible rim.*

While AiResearch designs and makes over 136 models of air and gas control valves for countless applications, the butterfly valve is particularly suitable for controlling the high temperature and high pressure flows encountered in jet and turboprop engines.

AiResearch non-jamming butterfly valve uses *no* organic sealing device. In closing the valve, the convoluted rim compresses, insuring seal. It operates efficiently under 225 psi and at temperatures up to 850 degrees F. Valves of this unique design can be as large as 7 inches in diameter and stand pressure loads up to two tons. AiResearch supplies the means to operate them electrically, pneumatically or manually.

Such pioneering in design — as well as in manufacturing and laboratory testing — is typical of the practical creative thinking and doing at AiResearch today.

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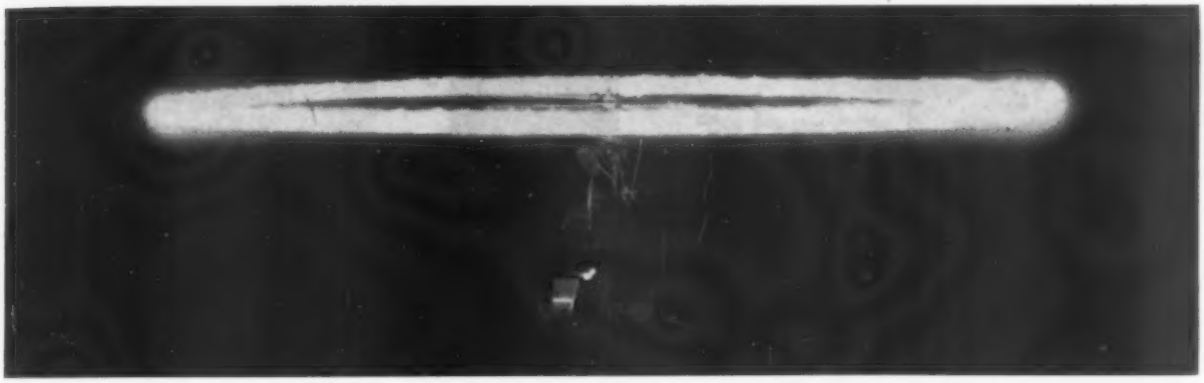


Hiller-Hornet — Low-Cost, Backyard 'Coptor

By William D. Perreault

HILLER Helicopters of Palo Alto, Calif., is blazing a new trail with the first low-cost production helicopter. Known as the Hiller-Hornet, the newly announced helicopter is priced at $4,900 and is compact enough to fit in the average garage without folding the rotor blades. This is not a futuristic design but is actually in production today.

Unfortunately, the Hiller-Hornet will not be available for commercial sales for some time. Originally the two-place, ram jet-powered Hornet was scheduled for commercial sales this spring, 12 were in production and Hiller's shops were set up to handle production of five ships each day. Then the U. S. Air Force and Navy stepped in. Completed models are under evaluation and all production is going to the services.

Meanwhile Hiller is expanding its facilities to meet the production demands of the services for the Hiller 360 and Hornet. Employment has jumped from 100 in June to over 300 now, plant space has been increased from 38,000 square feet to 62,000 and will probably reach 90,000 square feet by year's end. And production backlog, which was $1½ million in October, $4 million in December, has now been unofficially estimated at several times that amount.

Hiller-Built Ram-Jet

Heart of the Hiller-Hornet, sister ship to the 360 now in production for the USAF and Navy, is the ram-jet engine designed and built by Hiller. Weighing only 11 pounds, the ram jet produces 31 pounds net thrust. One of these ram-jets is mounted on the tip of each rotor blade by means of two screws. An engine change takes three minutes.

At an estimated engine cost of $150-$200 no engine overhaul is anticipated. With the engines mounted on the rotor tips, the bulky cabin engine installation normally required is eliminated. So is the complex gearing which carries normal engine power to the rotor blades and the clutch and other devices accompanying routine installations.

These eliminations permit the overall size to be kept down to a point where the complete utility model Hornet weighs only 356 pounds empty. Thus the total of 62 pounds' thrust permits the two-place helicopter to climb at 1,100 feet per minute for the first 1,000 feet, cruise at 70 miles per hour, and have a top speed of 80 mph. With its sub-sonic ram-jet engine design Hiller's newest rotorcraft has a range of over fifty miles with two passengers.

HILLER-HORNET, now in production with output going to the military services, is shown in flight. Both the utility model and "plush" model with fibre-glass pilot enclosure are shown. Hornet weighs 356 pounds empty, cruises at 70 mph, climbs at 1,100 feet per minute.

Tail Rotor Eliminated

Use of ram-jet engines on the rotor tips also minimizes torque problems associated with piston-engine-powered helicopters to a degree that permits elimination of the tail rotor. Inherent stability, typical of the Rotor Matic control proved in the 360 and now used in the Hornet, combines with improved cockpit controls to make flying easier and safer.

The pilots controls consist of a cyclic pitch control (see cut), which hangs directly in front of the pilot, and a collective pitch and throttle control. The collective pitch control governs the pitch of the rotor blades and thus controls lift characteristics. By increasing blade pitch the pilot causes the helicopter to ascend or by decreasing it, lowers the craft. This control is exercised by moving the collective pitch lever up or down.

Moving the collective pitch control right or left moves the rudder. The hinge line of the rudder is such that this action subjects it to the down blast of the rotor and causes the tail to swing as desired. The throttle control, which governs fuel flow to both engines and thus governs rotor speed, is also mounted on the collective pitch lever. The entire lever is movable so that it can be used on either side of the cockpit or in the middle. A simple fitting makes it possible to quickly transfer the operating lever to any of the three positions.

The cyclic pitch control (see cut), a Hiller design known as the Rotor Matic, operates a pair of small airfoils, sometimes called paddles, which govern rotor pitch by transferring aerodynamic loads through the hub mechanism. This system eliminates the direct mechanical hook-up between the rotor and the pilot control,

Design Trends

By Richard G. Worcester

THE Deputy Chief of Naval Operations (Air) and the Chief of BuAer stated before the Senate Appropriations Committee that the number of Navy and Marine aircraft in 1950 totaled 2,185. Fahey's "Ships and Aircraft of the U. S. Navy" lists some 49 different types of Navy designs, so the Navy has an average of 44.5 aircraft of each design. The Russian Black Sea, White Sea, Baltic and Pacific Fleets use about 750 aircraft of two different types (excluding some lease-lend PBYs) and so their average is 375 aircraft of each design.

In fiscal 1951 it was proposed to procure 915 Navy airplanes and there are at least 17 different main designs and so the average Navy production run annually is about 47 to each design. The British Navy is ordering about 300 aircraft to at least 11 different designs so their average is less than 30 aircraft annually to each design. As it costs about $240 per lb. gross weight to build prototype aircraft and about $20 per lb. gross weight to build production models it is clear from these figures where the difference between the East and West approach to aviation lies.

•

The engineering behind the Comet means that de Havilland of England has gone almost all the distance towards producing an effective medium bomber. Assuming there are four Sapphire jets and a fuselage L/D of 13 instead of 9.3, the cruising speed would be about 570 mph and with methanol injection the aircraft might be within the compressibility limit of the wing which is probably around .9 Mach. The only trouble is that it is notoriously difficult to build a bomb bay in a low-wing airplane. Nevertheless, the company's know-how of 100,000-lb. jet aircraft is a useful munition of war which has cost the British taxpayer very little considering the revenue potential of the basic commercial design.

•

"The A2D carries four times the amount of bombs per gallon of fuel as jet attack airplanes." "The A2D takes off in less than one-third the distance of jet bombers." These forthright statements were made by the Douglas Company as justification for turbo-propping the A2D. But the Douglas XA3D-1 is a 65,000-lb. jet bomber so the Navy is evidently prepared to pay the heavy price for an extra 100 mph. speed. Production is apparently planned for the A3D, so it will be the fourth (AJ-1, A2J-1, P2V-4) which can operate only from the 45,000-ton "Coral Sea" class of carriers. Four Navy atomic bomber designs would be fine if there were 30 Coral Sea ships instead of only three. In fact, as Douglas has candidly pointed out, the A2D is the airplane with a future because it can be flown from the smallest (CV-55) carriers and before long it will be carrying an atomic weapon externally.

•

After designing his Pulqui II swept wing Nene-powered jet and supervising its production at Argentina's Cordoba factory it was a brilliant and characteristic gesture typical of Kurt Tank to fly it himself last month at a demonstration in Buenos Aires. Professor Tank is reported to have reached nearly 650 mph in front of President Peron and a large group of technicians. Tank, like Lippisch and Karman, is another of these legendary international figures; his deadly Focke-Wulf FW-190 was the forerunner of all the 400-mph, radial-engined fighters like the F4U, F7F, and the British Tempest. The Russian Lavochkin La-9 and La-11 both bear obvious traces of the FW-190. The Grumman F8F and the Hawker Fury both carry Tank's formula to its ultimate conclusion with a speed of about 500 mph at water injection rating.

•

So the 1950-51 edition of "Janes Fighting Ships" has given aircraft carriers precedence over battleships for the first time—well, well.

decreases pilot control loads and introduces stability.

Aluminum Rotors

Unlike the rotor blades on the Hiller 360, which are made of laminated wood, the Hornet has Hiller-built rotors using an aluminum spar design covered with aluminum sheet metal rivited in place. Flexing of the rotor is sufficient to act as a de-icing system.

The pilot has four instruments and a button on the control panel: fuel flow, rotor tachometer, airspeed and altimeter. The tubular type flow meter (see cut) shows the pilot his rate of fuel consumption. This determines engine power and rotor speed. Normally the engines drive the rotor at 550 revolutions per minute. A governor prevents the rotor from overspeeding by limiting fuel flow when this speed is attained. The tachometer generator clocking rotor speed is mounted on one of the tubular support members below the rotor.

Engine fuel is stored under the pilot's seat and fed to the engines by a vane-type, high-pressure fuel pump mounted externally just below the rotor. The pump is driven by a set of pulleys and drive belts which are mounted on an extension of the rotor shaft in the cabin. One of the major contributions of the new helicopter to the use of tip-mounted ram-jet engines may well have been the design which permits passing high-pressure fuel from the stationary cabin to the rotating blades, a point about which Hiller is not releasing information.

In flights to date the Hiller-Hornet has operated successfully on virtually

SELF-STARTING is provided by a one-horsepower, gasoline-driven engine which get the rotors up to speed before starting the ram-jet engines. Alternative systems for use of a hand crank or one-horsepower electric drill attachment are also used. Note the belt drive for the fuel pump at the base of the rotor shaft.

SIMPLICITY of the ram-jet engine attachment to the tip of the rotor blade, accomplished with two screws, makes a three-minute engine change practical. Engines will sell for $150-$200.

the entire range of petroleum fuels from regular aviation fuels through bunker oil.

Starting the Rotor

The button on the pilot's instrument panel controls ignition. The ram-jet engine must be moving at rather high speed before it starts to operate since it depends on forward speed for the ram compression. The Hornet provides three means of getting the rotor to speed.

Simplest method, although not the easiest, is hand cranking the rotor to starting speed. Secondly, an ordinary one-horsepower electric drill can be connected to a fitting on the side of the aircraft to crank up rotor speed, or finally, a one-horsepower gasoline engine can be provided mechanically linked to the rotor during starting. The latter arrangement is shown in the accompany photos.

A small battery will be provided in the cockpit and through a coil and spark plug will supply the spark needed to start the engine. Once the engine is started burning is continuous. This system is not successful in operational use yet and at present fuel spilled in the engine while it is still stationary is ignited before the rotors start turning.

The Hiller-Hornet is very simple in design and 92% of the work is subcontracted. The control system, engine, landing gear, engine mount, all machining and welding is done at Hiller's plant in Palo Alto.

Tubular Steel Frame

The entire frame of the Hornet is made of tubular steel. The cockpit enclosure is made of a two-section fiber glass while the tail section and rudder are fabric covered.

Hiller calculations indicate the Hornet has a ceiling of 12,000 feet but tests to date have been at low altitude. Relighting the engines in flight

SOUTH KOREA: UN wounded are loaded on a Bell H-13D helicopter near Mun-mang-ni for evacuation to a rear hospital. (Acme Photo)

Mercy HAS ROTARY WINGS

The helicopter has "come into its own" in Korea. Only the most glowing reports of achievements have been attributed to military helicopters and their crews. One of the most commendable "mercy mission" performances won the Distinguished Flying Cross for the U. S. Army's Second Helicopter Detachment on January 14, 1951.

The award was made in recognition of the successful evacuation of 23 wounded men from the battlefield to a hospital 25 miles in the rear. Using four Bell H-13D helicopters, U S. Army pilots completed the assignment in 2½ hours. One helicopter suffered 18 bullet holes during its flights.

In addition to the Army's H-13D, Bell HTL-4s are also serving in Korea. One Marine helicopter pilot made the most of his HTL-4 by evacuating four wounded (two in the cockpit and one each in litters) on one trip.

BELL *Aircraft* CORPORATION

Pioneer of Supersonic aircraft—remote controlled flight—jet and rocket propulsion—rotary wing aircraft—fighter design, armament and construction—guided missiles.

CABLES

AMPHENOL coaxial cables made with Teflon dielectric have low loss and perform satisfactorily at temperatures as high as 500° F. Covering the Teflon dielectric are two silver coated shields and two wrappings of Teflon tape. The jacket consists of two fibre glass braids impregnated with silicone varnish which is oven baked to provide maximum moisture and abrasion resistance.

CONNECTORS

Because impedance specifications of Amphenol RF Connectors can be depended on, no line unbalance is inserted, nor is the standing-wave ratio increased. Amphenol RF Connectors meet the exacting requirements of laboratory applications—have longer leakage paths, lower loss.

The 82 series connectors illustrated are weatherproof type HN connectors for use with 50 ohm cable. These connectors have full 4Kv. rating when used with Silicone Compound and may be used with 70 ohm cables when impedance is not critical.

The 83 series UHF connectors illustrated are low cost general purpose connectors ideal for laboratory applications. Not constant impedance, but suitable for general RF transmission below 160 megacycles.

Teflon inserts are standard on the connectors illustrated and will be supplied with any AMPHENOL RF connector on special order.

AMPHENOL

AMERICAN PHENOLIC CORPORATION

1924 SOUTH 54th AVENUE CHICAGO 50, ILLINOIS

COMPACT cockpit and simple controls are shown here. Control stick in front of the pilot, suspended from overhead, governs collective pitch controlling ascent and descent of plane. Cyclic control, rudder and throttle are combined on the shaft in the pilot's left hand. Note the tubular fuel flow meter on the instrument panel.

has not been attempted to date. Tests have shown that the autorotational characteristics of the ship are good. If the engines cut out, even at a 10-foot altitude, it's possible to delay striking the ground for as much as 10 seconds.

When available commercially, the Hornet should make the helicopter a practical utilitarian vehicle. It's $4,900 price, compared with $21,500 for the "low priced" Hiller 360, should permit pilot training costs to be slashed far below their present $50 per hour level, insurance rates will reflect the lower initial cost and even the higher fuel consumption of the ram-jet will be somewhat counteracted by the lower cost of the fuels it will burn.

The Hiller-Hornet

General Dimensions

Rotor blade diameter .....23 feet
Height (to top of rotor) ... 7 feet

Weights

Utility Model
Empty ..... 356 pounds
Useful load ..... 544 pounds

Powerplants

Number ..... Two
Make ..... Hiller Ram Jets
Weight (each) ..... 11 pounds
Power developed .. 31 pounds net thrust (equivalent to 34 hp.)

Performance

Normal cruising speed ... 70 mph
Top speed ..... 80 mph
Range (two passengers) .. Over 50 miles
Ceiling (full gross load) 12,000 feet
Rate of climb ..... 1,100 feet per minute

OVER $100 MILLION SINCE KOREA:

Military to Boost Civilian Maintenance by $251 Million

By WILLIAM D. PERREAULT

SINCE the outbreak of hostilities in Korea, the U. S. Air Force and Navy have contracted with civil companies for more than $110 million in repair, maintenance, overhaul and reconditioning work. Only one of these contracts has been completed to date, according to the USAF, and many are in their early stages.

Impressive though this figure is, it is but a small portion of what is in the mill for commercial maintenance and overhaul facilities. Some $251,000,000 more in this type of work has already been designated by the USAF, funds have been allocated and contracts are in the early stages of negotiations.

Even more important is the USAF's program for fiscal 1952 which proposes the use of contract maintenance for a large share of all depot-level maintenance and overhaul. Funds for this program are included in the fiscal '52 budget.

This is a planned program outlined in a new regulation Air Force Regulation 66-17, which states that the USAF "is to make maximum use of commercial organizations for the performance of maintenance that is not required in direct support of tactical units, wherever efficiency or economy can be increased."

Expediency Contracts

A good many of the contracts (see chart) making up the current backlog were issued as a matter of expediency, to meet the peak demands brought about by the international situation. It is evident that regular military depots were not able to meet the mushrooming needs. But the new regulation establishes use of commercial facilities as a specific phase of military operations.

The USAF, in its fiscal 1952 budget, requests the funds to carry out this program. With the more than $100 million already contracted and $251 million under negotiation, there is little likelihood that the new appropriations will bring about any sudden increase in commercial activity. Rather it will stabilize current operations with the civil industry assured of a sizable proportion of all USAF depot maintenance.

$60 million has been to companies dealing largely in service work, more than half of the USAF contracts going to such groups. The nature of the work, a sizable amount of which is basic aircraft modification, contributes to this distribution.

Also, the manufacturers had much greater idle potential initially. This potential is rapidly being absorbed by straight manufacturing activities and will consequently tend to direct work covered by the new USAF regulation to the full-time service organizations.

Basic Criteria

These are the basic considerations that will govern the Air Force in utilizing the services of commercial organizations for depot-level maintenance work:

- Funds are available,
- Merit for the contract is established,
- The civil organization is particularly suited and qualified,
- Accomplishment by contractural means is more expeditious,
- Support of combat organizations is not jeopardized, and
- Flexibility of the depot system is not jeopardized.

Another basic factor of interest is the USAF's policy toward building depots. There is a current need for more overhaul depots by the Air Force. Because the projected needs during World War II indicated that many of the planes built then would never be overhauled, relatively few depots were built. This was the actual case and depot capacity never approached the apparent long-range needs if these planes were to be operated indefinitely. Furthermore, a number of the large depots which were built were overseas where they are no longer available.

In establishing its new policy toward contract maintenance the Air Force has determined not to build depot capacity for non-tactical requirements but instead, because of inherent advantages to the nation's economy, to depend on civil facilities for these plus limited tactical needs.

Within the limitations outlined above, principal being that the policy not deprive tactical units of operational mobility or impair the ability of the depot system to provide essential support, these are the items "considered suitable for accomplishment by commercial organizations":

Tactical Work Categories

Base Level: Field echelon of maintenance of fixed or semifixed electronics and other complex systems.

Depot Level: Maintenance of complex equipment where continuity of sup-

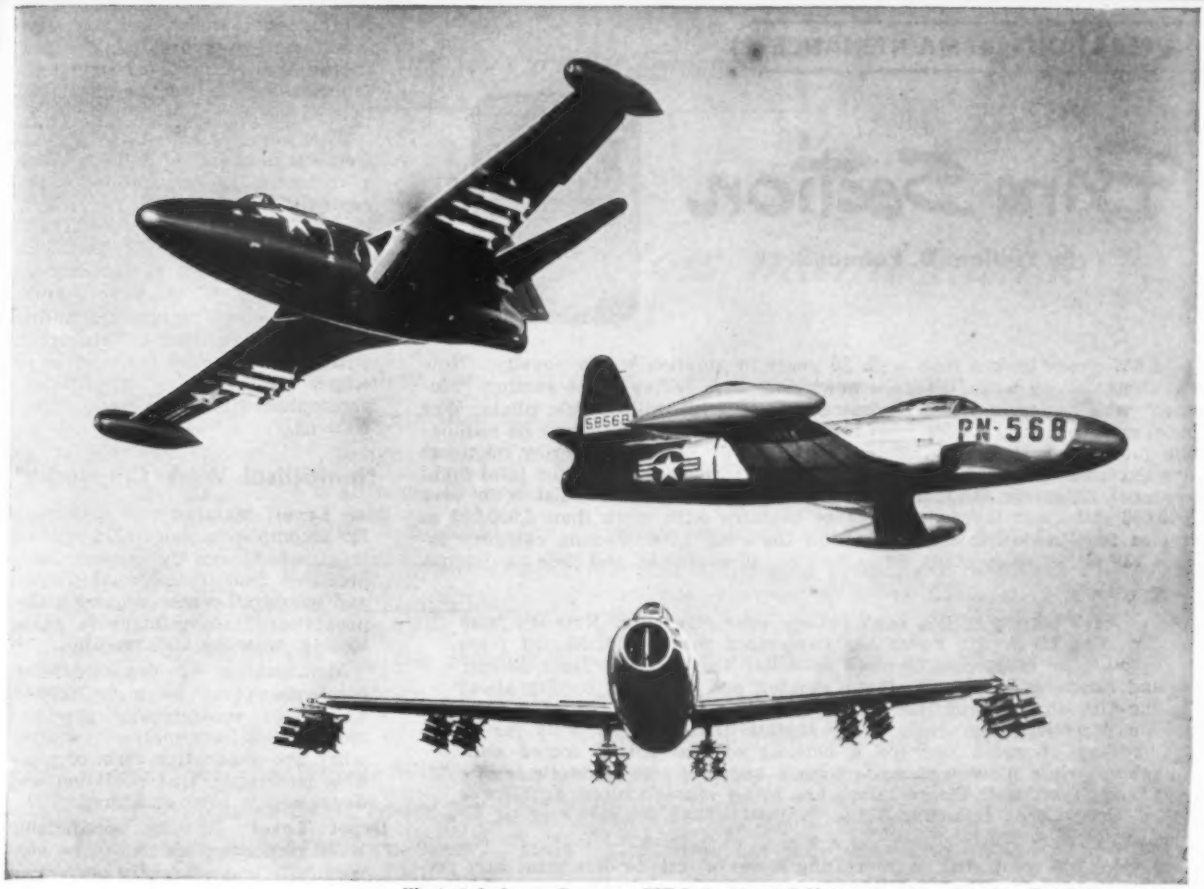
EXTENSIVE nature of cycle overhaul work is evident as this Douglas C-54, being overhauled at Texas Engineering and Manufacturing Co.'s facility in Dallas, Texas, passes through one stage of the job. Temco, which claims to have one of the largest facilities of its type in contract use, has been working on the MATS planes since the early stages of the Berlin Airlift.

Military Maintenance Contracts with Commercial Companies

Company	Contract	Date	Dollar Value
USAF			
Aircraft Engineering & Maintenance	C-54 reconditioning	Sept. 11, 1950	$1,000,000.00
American Aircraft Corp.	Overhauling Misc. "O" type aircraft engines & spare engine components	Aug. 23, 1950	530,000.00
Boeing Airplane Co.	YC-97 modification	June 30, 1950	437,239.56
	B-50 modification	July 12, 1950	1,000,000.00
Curtiss-Wright Corp. (Airplane Div.)	B-29, removal from storage, ferrying & reconditioning	May 31, 1950	6,000,000.00
Douglas Aircraft Co.	B-26, removal from storage & reconditioning	June 30, 1950	7,500,000.00
	C-74 reconditioning	Nov. 30, 1950	2,334,955.00
Grand Central Airport Co.	T-6, removal from storage, recondition & prepare for shipping	June 8, 1950	1,038,681.10
	F-51, removal from storage & reconditioning	June 30, 1950	6,884,460.00
	B-29, removal from storage & reconditioning	June 30, 1950	6,250,000.00
	Overhaul of aircraft engines	Dec. 8, 1950	1,884,460.00
	B-29, reconditioning of aircraft	Jan. 26, 1951	19,220,000.00
	Repair & overhaul of aircraft	Jan. 25, 1951	2,835,000.00
Lockheed Aircraft Corp.	C-97, 1,000-hr. maintenance inspections	Aug. 23, 1950	280,000.00
	Repair of airplanes	Jan. 19, 1951	25,290.00
Lockheed Aircraft Service, Inc.	F-51, removal from storage, reconditioning & preparation for shipment	June 26, 1950	1,422,524.00
	F-80 modernization	Sept. 5, 1950	2,000,000.00
	F-51 reconditioning	Dec. 19, 1950	3,060,000.00
North American Aviation, Inc.	T-6 reconditioning	June 28, 1950	8,971,492.13
	T-6 modification & modification kits	Nov. 13, 1950	226,590.00
	T-6 modification & modification kits	Jan. 19, 1951	107,385.00
Pacific Airmotive Corp.	T-7, removal from storage, ferrying & reconditioning packing & crating	June 7, 1950	724,104.35
	F-51, removal from storage & reconditioning	June 30, 1950	2,500,000.00
	C-54 reconditioning	Sept. 11, 1950	845,000.00
	P-51 reconditioning	Dec. 19, 1950	3,060,000.00
Slick Airways, Inc.	C-46, removal from storage & reconditioning	June 30, 1950	1,040,000.00
Sparton Aero Repair	B-17 reconditioning & modification	Nov. 17, 1950	250,000.00
Texas Engineering & Mfg. Co., Inc.	T-6 reconditioning & preparation for shipment	April 25, 1950	200,000.00
	C-54 recondition	May 25, 1950	1,655,119.20
	C-97 modification	June 19, 1950	231,408.00
	F-51, removal from storage & reconditioning	June 30, 1950	5,000,000.00
	C-54 reconditioning	Sept 11, 1950	1,845,000.00
		USAF Total	$90,386,708.34
NAVY			
Beech Aircraft Co.	Overhaul & conversion of SNB type aircraft		9,570,435.60
Douglas Aircraft Co.	Conversion program to obtain Super DC-3 aircraft		21,902,600.00*
Goodyear Aircraft Co.	Conversion program on ZPK Airships		9,500,000.00
Lockheed Aircraft Corp.	Heavy maintenance program for the Constitution		479,805.00
Transocean Air Lines	Overhaul of Commandos		135,056.35
		U. S. Navy Total	$41,587,896.95

*Super R4D program (Super DC-3's) which Navy classes as modification.

SIZE of the task of removing planes from storage and reconditioning is reflected in this photo showing a small crossection of Boeing B-29's in "mothballs" since the end of the war in depots across the country. At right a worker starts peeling away the protective coat. Extensive inspection, corrective maintenance, and in many cases, maintenance is required after the cocoons are removed.



Illustrated above—Grumman F9F-3, Lockheed F-80 Shooting Star, Republic F-84E Thunderjet.

Allison Jet Power

"First" in Korea

FROM the very onset of hostilities in Korea, Allison jet-powered fighters have flown more missions, downed more enemy planes and inflicted greater damage to troops and equipment than all other fighter aircraft in the theater.

Starting with the first hours of combat, when they were the only jet fighters available to the Air Force, Lockheed F-80 Shooting Stars have flown 50,000 hours with no aircraft loss due to engine responsibility. They have proved effective in attacks on ground troops and have consistently outfought MIG-15's.

Doing a similar job, Grumman F9F-3 Panthers in one month averaged 97% combat availability from the Navy Carrier, Valley Forge—a record never before equaled.

F-84E Republic "Thunderjets" are also blasting enemy air and ground forces with guns, bombs and rockets. During a two-week period in this activity, only one Allison engine change was made in the entire 27th Fighter Escort Wing.

Pilots and crews agree that it is the experience coming from time in the air which builds confidence. The dependable Allison performance results from a solid background of jet engine experience — more than 500,000 hours in the air.

GM GENERAL MOTORS

Allison

DIVISION OF GENERAL MOTORS
INDIANAPOLIS, INDIANA

Extra Section

By William D. Perreault

A FEW years back a man with 20 years in aviation was a novelty. Now almost every week there's a news note here telling us of another "old-timer" who has passed this landmark. Same with million-mile pilots. For this reason we found a note from British Overseas Airways about its million-mile pilots of particular interest. Some 264 of BOAC's air crew members have exceeded the 1,000,000-mile mark, more than one-fifth of the total flight personnel. **Captain O. J. Jones,** flying since 1917 tops the list with over 3,000,000 miles but there are 17 other captains with more than 2,000,000 as well as four radio officers. Others in the over 1,000,000-mile category include 139 pilots, 15 co-pilots, 63 radio men, 16 engineers and nine navigators.

•

It's getting so you can't believe your own eyes. Now it's false fur. The U. S. Air Force has announced that fur fashioned from nylon fiber may soon be used in collar trimming of flight jackets and hoods, caps, etc. Synthetic mouton and wolf fur, costing about one-fifth the cost of the real thing, have been developed by the Air Materiel Command's Aero Medical Laboratory. Wolf fur is made-up of nylon fiber on a backing of knit cotton coated with rubber while mouton is made from a blend of two synthetic textile fibers, Dynel and Vicara. Both are being manufactured by George W. Borg Corp., Delavan, Wis.

•

CAA has completed an interesting series of tests to determine best procedures for stopping reciprocating engines in a hurry. Minimum time lag was eight seconds and this resulted with any of three configurations of mixture, throttle, shutoff valve and propeller. These were: mixture in idle cut-off, throttle closed and propeller feathered, same plus shutoff valve closed, same as latter but with throttle opened. Longest period, 41½ seconds, resulted when shutoff valve alone was used to stop engine. This resulted in backfiring.

•

And from Pan American Airways comes an interesting note on NC 88898, a Douglas DC-4. Originally christened The Archer by Pan American, when purchased from the USAF with 1,627 hours' military service logged, NC 88898 was the first PAA aircraft to be renamed. It was renamed the Clipper Hurricane in honor of the University of Miami's undefeated football team which it carried to games away from home. By year's end, 1950, the Clipper Hurricane had flown 16,255 hours, burned 3,966,220 gallons of fuel, worn out 29 sets of tires (about $10,550 worth). PAA had spent nearly $1.5 million on flying and another million on maintaining NC 88898.

•

The possibility that jet aircraft operations may be in part responsible for a reported improvement in the accident frequency in the Swedish Air Force is raised in one of the Flight Safety Foundation's recent bulletins. The number killed per 100,000 flying hours dropped from 56.3 in 1941 to 18.3 in 1948, 31.5 in 1949 and 16.9 in 1950. **Jerry Lederer,** president of FSF, comments that lack of takeoff torque, improved vision from cockpit, no prop drag following engine failure, cleaner designs giving better glide angle, etc., may be contributing factors to greater safety in jet aircraft.

•

An effective job of educating the public to the operational problems posed during approaches to airports and how they affect safety is being done by the Air Transport Association and CAA in New York City. Following an unusually troublesome anti-noise campaign in N. Y., the ATA-CAA group convinced the city council of the problems involved and, at the request of the council, has started a series of flights over NYC for representatives of some 60 civic groups who were responsible for restrictive anti-noise legislation aimed at operations into airports.

port can be assured and excessive investments in tooling, facilities and training can be avoided by manufacturer or contractor participation.

Work categories which are infrequent in character and for which a commercial organization is exceptionally well qualified or which, if accomplished by contractural means, will not impair the flexibility of the depot system nor its ability to support the tactical units.

Work projects beyond the ability of the depot system to accomplish within the specified time limits or which can be more expeditiously accomplished by commercial organizations.

Nontactical Work Categories

Base Level: Maintenance authorized for accomplishment at field echelon level which can be economically procured from commercial sources and would otherwise require a disproportionate investment in parts, tooling, training and facilities.

Maintenance of depot echelon level which can be more expeditiously or economically procured from local commercial sources when the alternative costs of pipeline, packaging, transportation and depot repair are considered.

Depot Level: Routine, predictable work categories which can be economically and efficiently performed by commercial organization.

Nonroutine work projects beyond the ability of the depot system to accomplish within the time limits required or which can be more economically or expeditiously accomplished by commercial means.

Key organization in the new program is the Air Materiel Command. Headquarters, AMC, is charged with the responsibility of determining the type and amount of work to be handled by commercial facilities. On the basis of recommendations supplied by the major air commands, AMC will prepare and publish in appropriate technical orders, lists of work falling within the intent of AFR 66-17 and advise the commands procedures to be used in making use of commercial facilities.

For many months, teams of USAF personnel have been visiting each of the engine and aircraft, and accessory overhaul facilities and evaluating their potential as contributors to this and future programs. AMC is expected to use this information in formulating its over-all policies and negotiating contracts.

While the U. S. Navy program represents over $20 million at present, exclusive of the $21,902,600 contract with Douglas for modification of DC-3's, the Navy does not plan on the wide-scale use of commercial contractors proposed by the Air Force.

The AVRO Jetliner — America's first Jet Transport

high serviceability... low maintenance

More time in the air, less time on the ground is one of the secrets of profitable airline operation. With this in mind, the designers and builders of the AVRO Jetliner have incorporated maintenance and servicing advantages that will assist ground crews. Engines can be serviced from the ground, inspection doors are within arm's reach and underwing pressure refueling is standard equipment.

In the air, the Jetliner is reducing flight time between cities. Those fortunate few who have flown in the Jetliner are proudly sharing their experience of smooth and comfortable flight with eager listeners. With greater carrying capacity, and the prospect of more flying hours per day, Jetliner performance promises a new high in serviceability. Studies of Jetliner serviceability and operation are available to interested operators.

A. V. ROE CANADA LIMITED

MALTON, ONTARIO

AVRO CANADA

MEMBER OF THE HAWKER SIDDELEY GROUP

TECHNICAL NEWS DIGEST

• **A $4,251,260 order for a new type of spark plug** for the Pratt & Whitney R-4360 engine has been placed with AC Spark Plug Division of General Motors by the U. S. Air Force. Featuring fine wire platinum electrodes and centrifugally cast silver core, the new AC plug is a high-altitude unit using a combination of one-piece, or monolithic insulator with resistance-glass seal for optimum operation.

• **A large shipment of Packard (Rolls-Royce) Merlin engines,** the second such shipment in the past two months, has been sent to Generalissimo Chiang Kai-shek's Nationalist Chinese forces on Formosa by Pacific Airmotive Corp. The 1490-horsepower Merlins, overhauled by PAC, power the North American F-51.

• **CAA's John F. McIntire, airport controller** at Akron-Canton, has arrived in Bangkok, Thailand, where he will assist the government of Thailand in improving air traffic control services under a technical assistance project of ECA. McIntire will also assist in arranging selection of student air traffic controllers who will come to the U. S. for further training.

• **Establishment of a Rocket Technical Committee** by the Aircraft Industries Association has been recommended by representatives of seven manufacturers engaged in design and development of rocket power plants. Purpose would be to coordinate engineering policy matters and engage in cooperative technical activities.

• **To aid airlines and other carriers in the selection** of sanitary sources of milk, ice cream and drinking water supplies, and thus help check transmission of water-borne and food-borne diseases across state borders, the Public Health Service of the Federal Security Agency has published consolidated listings showing approved sources. Lists, available from FSA's regional offices, will be published three times yearly: Jan. 1, May 1 and Sept. 1.

• **Because of the diminishing number of CAA** Airworthiness Directive items being issued, CAA has placed the issuance of AD cards on a bi-weekly basis. The new schedule, which does not affect the yearly summary, will use the same numbering system and in the event of stepped-up activity will return to the original weekly basis.

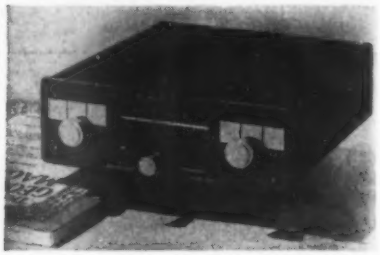
• **For completing more than a million man-hours** of work without a single lost-time accident, six departments of Curtiss-Wright Propeller Division were presented with safety awards by the New Jersey Dept. of Labor and Industry and the N. J. State Safety Council.

• **To provide consideration of safety aspects** of air navigation when licensing the construction of new antennas for radio facilities, the Federal Communications Commission has amended its regulations to require, in future cases, that where applicable the regional airspace subcommittee be given time to study and report on the possible hazards to air safety.

• **A new technique for measuring effects** of corrosive solutions has been developed by Armour Research Foundation of Illinois Institute of Technology under the sponsorship of the National Advisory Committee for Aeronautics. The new method is similar to television scanning and can be used for detection, study, recording and analysis of corrosion phenomena.

• **The CAB's accident report on Northwest Airlines' DC-4** accident in June of last year, in which the aircraft crashed into Lake Michigan, concluded that "there is not sufficient evidence upon which to make determination of probable cause." Despite intensive surface and underwater search, the aircraft was not located, with the exception of a few fragments.

• **Production of a new plastic separator** for electric storage batteries, a replacement for wood, natural or synthetic rubber separators, has been announced by The Electric Storage Battery Co., Philadelphia, Pa. The new separator, under development for the past five years, is made of polyvinyl chloride synthetic.



Compact— New "pancake" low-frequency range and broadcast receiver by National Aeronautical Corp., Ambler, Pa., sells for $99 plus tax. Designated the LFR-1, it weighs only 35 ounces, is 2⅛" x 6½" x 6⅝", plugs into any standard NARCO power modulator used with VHF equipment, or has a separate power supply of its own at extra cost. The edge-lighted dial features red light for night flying.

Daily Plane Utilization

International

		Sept.	Oct.
American	4 eng. pass.	3:53	3:50
	cargo	4:47	4:48
AOA	2 eng. pass.	1:40	*
	4 eng. pass.	5:27	*
Braniff	4 eng. pass.	7:04	7:56
C & S	2 eng. pass.	8:30	8:52
	4 eng. pass.	9:38	8:35
Colonial	4 eng. pass.	6:39	5:20
Eastern	4 eng. pass.	9:22	9:17
National	4 eng. pass.	9:07	8:37
	cargo	4:05	2:25
Northwest	4 eng. pass.	9:47	9:07
	cargo	7:20	7:37
Panagra	2 eng. pass.	3:24	3:22
	4 eng. pass.	5:35	5:28
PAA	2 eng. pass.	3:27	3:26
Latin Amer.	4 eng. pass.	7:14	6:01
	cargo	3:17	4:11
Atlantic	2 eng. pass.	1:17	1:15
	4 eng. pass.	6:31	5:02
	cargo	:35	:21
Pacific	4 eng. pass.	6:36	6:27
Alaska	4 eng. pass.	8:17	7:37
	cargo	6:57	5:11
TWA	4 eng. pass.	9:09	7:44
	cargo	4:29	4:27
United	4 eng. pass.	3:03	4:04

Feederline

All American	DC-3	6:41	6:08
Bonanza	DC-3	4:36	4:52
Central	Beech A-35	3:29	3:20
Empire	DC-3	4:48	5:01
Frontier	DC-3	7:00	7:03
Lake Central**	DC-3	4:07	6:10
	Beech Bonanza	2:38	2:36
MCA***	DC-3	5:21	5:58
Mid-West	Cessna 190	4:52	4:25
Piedmont	DC-3	8:06	7:59
Pioneer	DC-3	6:26	7:06
Robinson	DC-3	6:05	6:04
Southern	DC-3	6:36	6:47
Southwest	DC-3	5:32	5:14
Trans-Texas	DC-3	6:47	6:40
West Coast	DC-3	4:28	3:48
Wiggins	Cessna T-50	3:22	2:40
Wis. Cent.	Lockheed 10A	7:34	7:34

*Figures for AOA are through September 25, 1950 only, at which date the merger of that company and Pan American became effective.

**Formerly Turner Airlines.

***Figures cover feeder segment awarded MCA in the Parks Air Lines Investigation Case.

PAC Solves Low-Clearance Problem; Cuts Working Time

In hangars which have clearance of only 14 feet, Pacific Airmotive Corp. is overhauling C-54's at its new Pacific Airmotive Airport near Chino, Calif.

It accomplishes this by removing the landing gear and the vertical fin before snaking the fuselage into a hangar.

Although this is another example where necessity was the mother of invention, PAC's experience on the first planes overhauled indicates a substantial savings in man-hours may accrue from bringing the working level down to the ground.

Ray M. Tonks, general manager of the Burbank division and the Pacific Airmotive Airport, estimates the reduction in man-hours on an 8,000-hour overhaul might run as high as 35% by keeping the workers off ladders, workstands, etc.

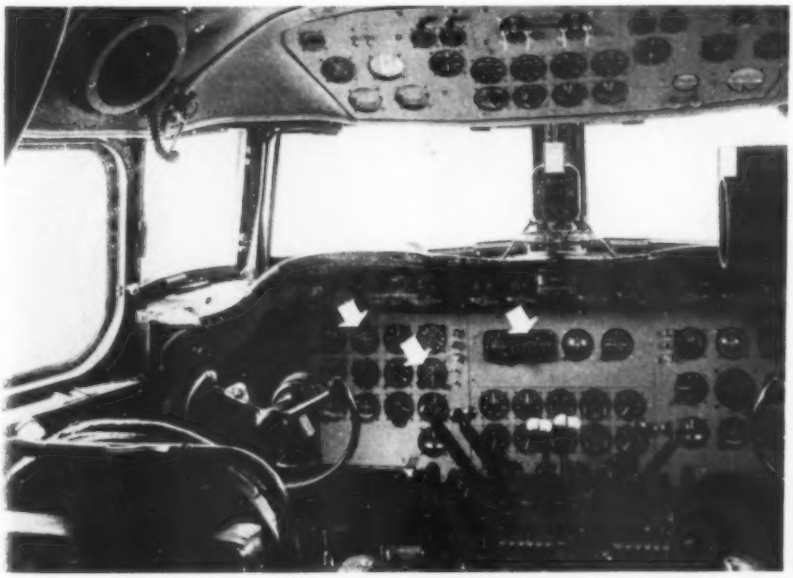
Too Short for DC-3

When PAC picked the former Cal-Aero flight school location as the site for its base for large aircraft overhaul and repair, it had to figure out how to use the four identical hangars whose clearance was two feet short of letting a DC-3 in the door.

Tonks solved the problem by installing jack pits in the pavement in front and in back of the hangars. A C-54 to be overhauled is rolled into position above the pits and the jacks adjusted to carry the load while the gear is removed. The jacks are mounted on dollies and after the fuselage is jacked down to floor level it is rolled into the hangar sideways. During overhaul, the fuselage travels the length of the hangar still on the dollies and goes out the rear door where it is rolled out to the jack pits and the gear reinstalled.

Using the specially installed pits, it took about an hour to remove the gear on the first plane, but subsequently PAC cut the time almost in half.

It is still too early in the experiment to obtain definite time study figures. So far PAC is using the method only on C-54's requiring 8,000-hour major overhauls. Planes with less time are worked outdoors in the conventional manner.



Steering Computer—This is the pilot's instrument panel in the Navy R5D Delta, a flying laboratory in which the Navy has installed a Collins Steering Computer, built by Collins Radio Co. The computer obtains heading, rate of turn, altitude, attitude, and similar flight information, correlates it and presents the data in composite form on the cross-pointer meter. Instrumentation, shown by arrows here, is being evaluated at the Naval Air Test Center in Patuxent, Md.

Van Dusen
AIRCRAFT SUPPLIES
TOPICS

Inter City Aviation Now Division of Van Dusen

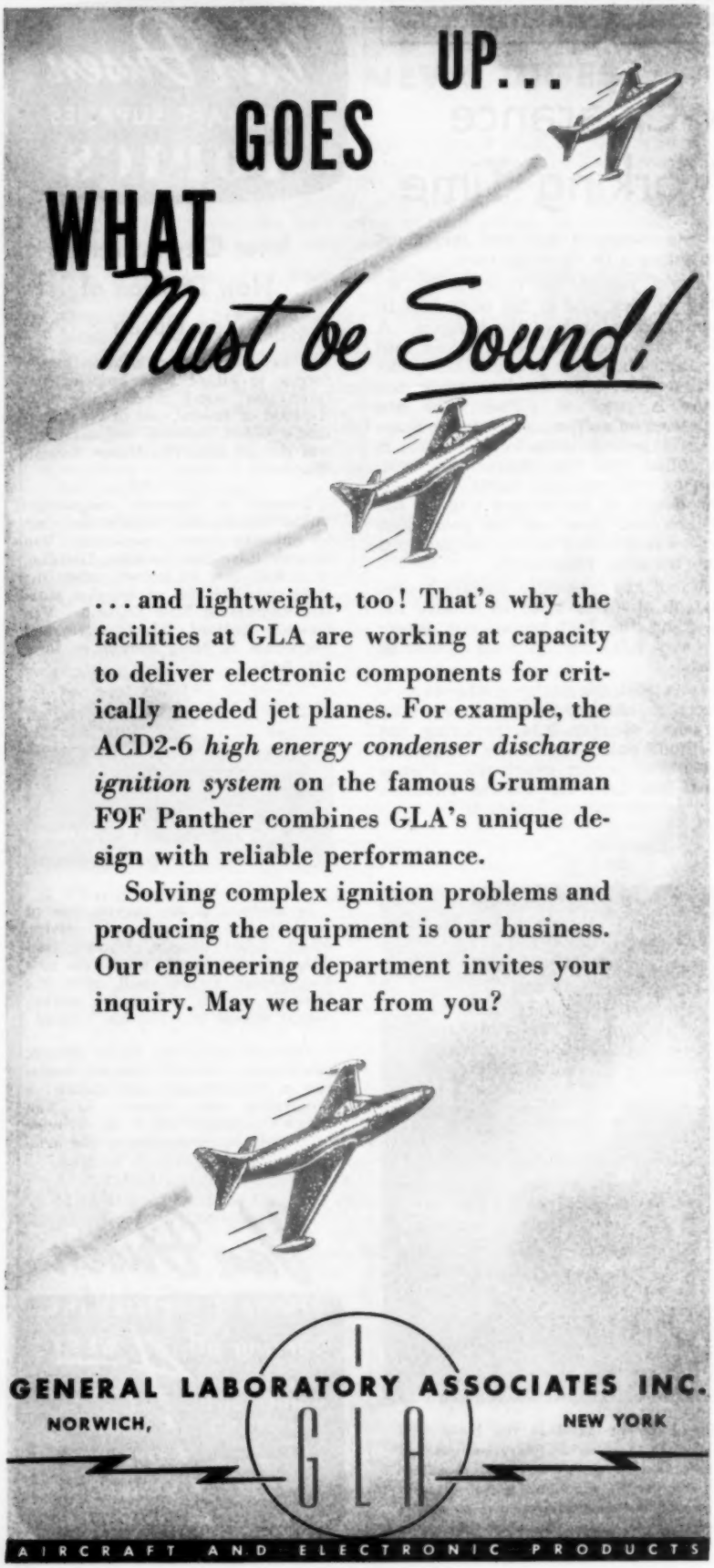
A step toward finer aviation supply service to all of New England was taken last month when Inter City Aviation of Boston, one of New England's oldest aviation organizations, was merged into Van Dusen Aircraft Supplies.

Located at Boston's magnificent Logan International Airport, less than 15 minutes from down-town, Van Dusen's Inter City Aviation Division, as it will now be known, offers the most complete line of aviation parts and supplies in New England. Van Dusen's Bedford, Mass. store and warehouse is being moved to Inter City now.

In addition to the proven type of superior Van Dusen supply service, which means prompt, efficient handling of your supply needs, the new Van Dusen facility will offer the finest in aircraft and engine service, hangar storage and transient service.

The next time you fly to Boston, you'll find a cordial welcome awaits you at Van Dusen's new facility, a progressive step forward in Van Dusen's constant effort to provide better and better service to the aviation public.

Van Dusen
AIRCRAFT SUPPLIES INC.
Serving all 4 BEST
AIRLINES
OPERATORS
EXPORT
MANUFACTURERS
Warehouses at
MINNEAPOLIS
TETERBORO, N. J. (New York)
BEDFORD, MASS. (Boston)
CABLE ADDRESS VANDUSAIR TETERBORO N J

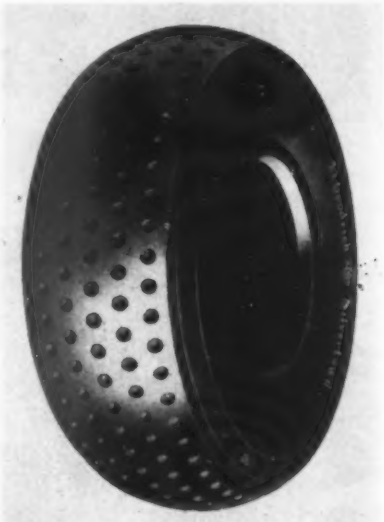

UP...
GOES
WHAT
Must be Sound!
... and lightweight, too! That's why the facilities at GLA are working at capacity to deliver electronic components for critically needed jet planes. For example, the ACD2-6 high energy condenser discharge ignition system on the famous Grumman F9F Panther combines GLA's unique design with reliable performance.
Solving complex ignition problems and producing the equipment is our business. Our engineering department invites your inquiry. May we hear from you?
GENERAL LABORATORY ASSOCIATES INC.
NORWICH,
NEW YORK
GLA
AIRCRAFT AND ELECTRONIC PRODUCTS

AMONG THE SUPPLIERS

Charles C. Sigmier, vice president of the Cleveland Trust Co., has been elected chairman of the board of **Parker Appliance Co.,** succeeding **Herbert I. Markham,** who will continue as chairman of the company's finance committee . . . **Inter City Aviation, Inc.,** aviation service organization located at Logan International Airport, Boston, has been merged into **Van Dusen Aircraft Supplies, Inc.,** and will be known as the Inter City Aviation Division of that company. Van Dusen will provide complete engine and aircraft servicing and place special emphasis on aircraft radio installation and service work . . . **Thomas O. McCraney** has been named general counsel and assistant secretary of the **Pacific Airmotive Corp.,** Burbank, Calif.

Minneapolis-Honeywell Regulator Co. has expanded the engineering personnel and departmental facilities of its Valve Division at Philadelphia by 400% . . . **Clarence Lynn** has been appointed engineering manager of the Atomac Power Division of the **Westinghouse Electric Corp.,** Pittsburgh, Pa. . . . **Weston Hydraulics Ltd.,** North Hollywood, Calif., has appointed **Fred Hosterman,** formerly hydraulic design specialist with Lockheed Aircraft Corp., chief engineer and design consultant . . . **Snyder Aircraft Division** of Air Associates, Inc., Chicago, has been named distributor for the **Parker Appliance Co.'s** precision aircraft O-rings.

Menasco Manufacturing Co. has sold its Malabar Jack Manufacturing Division to **Osborne Machinery Co.,** San Francisco, Calif., and is starting an expansion program which will double its capacity for landing gear production.

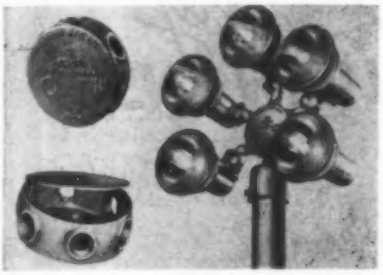


Dimple Tread— This is the new B. F. Goodrich airplane tire featuring cup-like depressions throughout the tread area. The new design, service tested by 16 commercial airlines during its development, is available in three sizes: 15.50-20, 17.00-16 and 34 x 9.9.

NEW PRODUCTS

Cluster Lights

A new cluster box for weatherproof cluster-light applications in lighting airport aprons, fuel servicing areas, etc., has been announced by Stone Manufac-

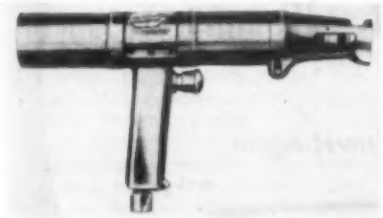


turing Co. Fabricated of aluminum alloys die-cast under pressure, the Stenco Cluster Box 25 has six holes tapped ½ inch IPS to take from one to five standard lampholders for 150-watt, 200-watt and 300-watt outdoor weatherproof reflector bulbs. Quick access is provided to inside wiring by a removable cast-aluminum cover plate sealed with a heavy cork gasket. Slip fittings for pipe mounting and brackets for wall mounting are available or clusters can be directly mounted to ½-inch conduit without accessories.

When contacting **Stone Manufacturing Co.**, 489 Henry St., Elizabeth, N. J., please mention AMERICAN AVIATION.

Air Saw & File

An improved model Air-Speed saw and file for use on steel, stainless steel, dural alloys, iron, aluminum plastics, fibreglass, wood, etc., has been introduced by Air Speed Tool Co. Very similar to the Air-Speed saw and file introduced four years ago, the new unit features simplified gun valving, strengthened and tapered internal springs and plunger washers of increased weight and gauge to provide trouble-free operation. Exhaust ports have also been reworked to prevent entrance of abrasive materials into the tool. Requires a starting hole 1/32 inch wide and ½ inch long or, if modified,

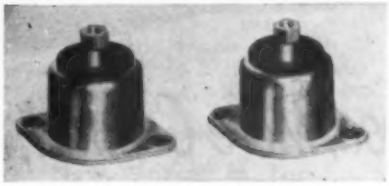


even less. Working stroke adjustable from ¼ to 1¼ inches. The front barrel of the tool is free to be hand-rotated a full 360 degrees, making it possible to cut full circles in some types of material.

When contacting **Air-Speed Tool Co.**, 1509 West Slauson Ave., Los Angeles, Calif. please mention AMERICAN AVIATION.

Isolators

A new series of air damped shock and vibration isolators to meet the requirements of miniaturized equipment has been introduced by The Barry Corp. The series 6465 Barrymounts employ air damping to minimize the shock of aircraft landing and taxing and limit excursion even at resonance. Non-linear metal springs assure substantially constant resonant frequency throughout a two-to-one load range. Load ratings of bases using these mounts are 0.1 to 3.0 pounds per mount. Available with aluminum shells, steel springs and rubber air chamber snubbers. Weighing ¼ ounce each, the units are one inch in diameter and 1-1/32 inches high under maximum load. Attachment stud has an axial hole ¼ inch deep, tapped with 6-32 thread. Available with a base



flange with two mounting holes on 1-9/64-inch centers and with a base flange having four mounting holes on one-inch centers.

When writing **The Barry Corp.**, 700-C Pleasant Street, Watertown 72, Mass., please mention AMERICAN AVIATION.

Heavy Duty Casters

A new caster developed by Aerol Co., Inc., in collaboration with manufacturers of military and commercial explosives, is now in full-scale production for pneumatic industrial wheels. The new caster, which features cased bearings designed to eliminate race wear common with ordinary ball bearings, is spark-proof. Designed as a mounting for 10-inch diameter wheels with a load rating of 1200 pounds.

When contacting **Aerol Co., Inc.**, 2820 Ontario St., Burbank, Calif., please mention AMERICAN AVIATION.

Disinfectant

A new sanitizing and deordorizing agent for use in transportation applications has been introduced by R. M. Hollingshead Corp. Known as "Whiz Puracide," the new disinfecting agent is said to be stainless, odorless, non-corrosive and non-irritant to tissue when used as directed. Virtually non-toxic, "Puracide" is actually a liquid known as quaternary ammonium concentrate with deodorizing properties as powerful as its disinfecting action. It can be diluted to any desired strength and is soluble in hard or soft water, hot or cold. Packaged in metal containers to eliminate breakage.

When contacting **R. M. Hollingshead Corp.**, 840 Cooper St., Camden 2, N. J., please mention AMERICAN AVIATION.

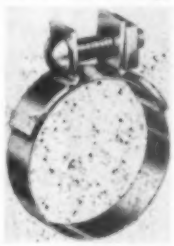
Midget Buzzer

A midget buzzer for producing a medium- intensity audible-tone signal in aircraft systems has been designed by Auth Electric Co. The Model 1702-0 buzzer is 1⅝" x 1⅛" x ½" in size; weighs 1½ ounces. Will operate on from 6 to 48 volts, DC or AC. Mounting lugs provided. Phospher-bronze springs and hard-drawn silver contacts are used. Variable volume and pitch provided for by double locking adjustments.

When writing the **Auth Electric Co.**, 34-20 45th St., Long Island City 1, N. Y., please mention AMERICAN AVIATION.

Stainless Clamps

A new line of stainless-steel hose clamps in six sizes ranging from ½ inch to two inches has been announced by Specialty Products Co. The clamping band is made of 26-gauge, ¼ hard stainless steel, while the "ears" are made of 18-gauge stainless. The nut and bolt are also of stainless steel. Another in a series of 6,000 standard stainless-steel clamps, plus specially engineered clamps, handled by SPC.



When contacting **Specialty Products Co.**, 1965 East 66th St., Cleveland 3, Ohio please mention AMERICAN AVIATION.

Adjustable Micrometer

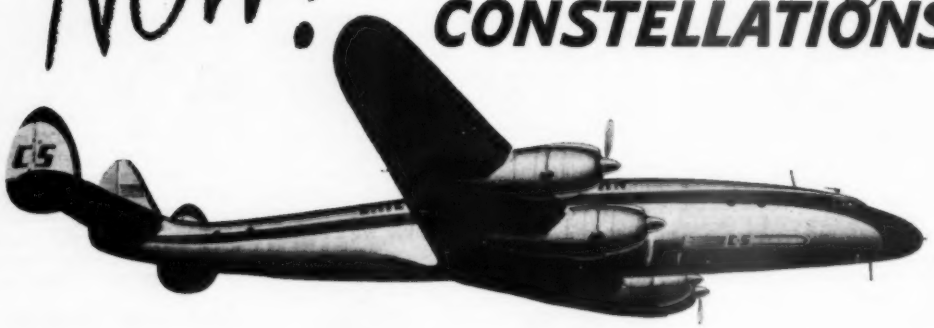
A single adjustable micrometer designed to take the place of 12 or 24 ordinary micrometers has been introduced by Lester Micrometer Co. The new Lester micrometer uses a tool-steel blade with a series of 12 or 24 vee-shaped notches cut into it. A carrier, sliding on the blade and holding a standard one-inch micrometer head, is positioned in the desired notch and a

spring clamp inserted to lock the carrier in place. The blade is marked to clearly indicate the number of inches in the opening and the micrometer portion provides for measurements down to .001 inch.

When contacting **The Lester Micrometer Co.**, 3210 Cedar Ave., Cleveland 15, O., please mention AMERICAN AVIATION.

NOW!

C&S NEW Luxury CONSTELLATIONS



More Speed, More Comfort, More Service

. . . AT NO EXTRA COST!

NEW ORLEANS - CHICAGO	**4 hrs. 40 mins.**
HOUSTON - CHICAGO	**4 hrs. 7 mins.**
NEW ORLEANS - HAVANA	**2 hrs. 40 mins.**
HOUSTON - ST. LOUIS	**2 hrs. 37 mins.**
ST. LOUIS - CHICAGO	**1 hr. 10 mins.**

FOR INFORMATION

Call the Nearest C&S Ticket Office or Your Travel Agent

C&S

CHICAGO & SOUTHERN AIR LINES

15th Year of Perfect Safety • **General Offices: Memphis 2, Tenn.**

Airline Salesmen Cover the Waterfront

. . . canvass New York liner arrivals for connecting prospects

By KEITH SAUNDERS

PIER 90, Hudson River, New York City, is a lucrative source of airline passenger business.

On first reading, that statement may appear incongruous, but to some airline sales representatives in New York it makes a lot of sense.

For Pier 90 is where the Cunard White Star Line's "Queens"—R.M.S. Queen Elizabeth and R.M.S. Queen Mary—dock on their arrival from Europe, and these luxury liners always carry a substantial number of passengers destined for Chicago, St. Louis, Dallas, Miami, Milwaukee, Los Angeles or some other point beyond New York.

In addition to the "Queens," there are some 25 other ocean liners and four U. S. Army transports that dock periodically in New York, and most of these ships are met and "worked" by representatives of from one to a half-dozen of the domestic airlines operating out of the metropolis.

Besides meeting some of the ships on a regular basis, airline representatives frequently go to the docks in response to radiograms that have been received from the ships in advance of arrival, or in response to special requests received from other stations on their system asking that certain steamship passengers be met and assisted.

Cunard Is Cooperative

In the case of the Cunard line, this "covering the waterfront" assignment is comparatively easy, because each of the "Queens" has a regular travel bureau on board, and upon arrival in New York the travel bureau manager immediately advises airline representatives of the names of any passengers he has booked on their lines, with their destinations, the bookings having been accomplished previously by radiogram.

Also, passenger lists are furnished the various transportation representatives, and an airline salesman can use this to pick out the names of all passengers whose destinations are on his company's routes. He then goes along the pier to where passengers' luggage has been placed in alphabetical arrangement, examining baggage tags and leaving his card with information as to where he may be contacted on the pier for air transportation.

On the Cunard docks there is a desk plainly marked "Airlines' representatives—Air Transportation," and this is the principal point of contact between arriving passengers and airline salesmen. Some carriers merely station a man at this desk when a ship is arriving, while others send two or more men to the docks, stationing one at the desk and having the others ferret out business along the pier.

Tips or leads on prospective passengers may come from a variety of individuals, including pier policemen, firemen, longshoremen or porters, as well as from representatives or agents of such groups as Traveler's Aid, the Red Cross and Foreign Student Advisers.

New Market to Tap

Airlines had not paid much attention to this potential traffic source until 1947, when domestic air traffic began to slump and alert airline sales staffs started looking around for new passenger markets to tap. Just at that time, the steamship lines were resuming their war-interrupted trans-Atlantic runs, foreign travel was on the increase, and thousands of potential air passengers were walking down the gangplanks of steamers docking in New York.

A potential was there. What was needed was sales effort, and several of the airlines moved into the picture. Since then, the number of liners on the Atlantic run has quadrupled and is still increasing as more vessels are put into service. The airline sales effort has increased somewhat proportionately.

Eastern Air Lines' New York waterfront assignment is handled by Bob Innes, hotel and steamship representative, with the assistance of Joseph Urell, interline representative, and occasional help from Edward Yarnell, assistant traffic and sales manager in the New York office.

In 1948, Eastern received 915 reservations from the steamships, 1949 reservations totaled 1,498, and indications are that the 1950 figure was even higher.

TWA Uses Two Men

Trans World Airlines splits its pier assignments between Max Newhouse,

Western Motif—Finished in fine-grain California redwood, new Western Air Lines counter at Los Angeles Airport is decorated with rawhide route maps, hand-hewn wooden letters and blending woodwork. Feature is shatterproof-glass counter area over baggage weighing scales, allowing agents to check weight at a glance.

American offers new Nonstop Flagship service

between...

Toronto and New York

The Finest Service Available

• Demonstrating again American's policy to provide the best in air transportation, a new nonstop service has been inaugurated between New York and Toronto. Fast quiet Convair Flagships make this service the most dependable as well as the most luxurious available.

DAILY MORNING AND EVENING DEPARTURES FOR BUSINESSMEN

In addition to the regular one-stop service, nonstop Convairs will depart from New York at 7:40 AM and 8:00 PM and arrive at Toronto at 9:40 AM and 10:00 PM respectively. Returning, 9:00 AM and 6:30 PM flights will arrive at LaGuardia Airport at 10:45 AM and 8:15 PM respectively.

AMERICAN AIRLINES INC.

AMERICA'S LEADING AIRLINE

who handles the "Queens," and Richard Acampa, who handles the Italian Line ships, "Vulcania" and "Saturnia." These latter ships carry TWA ticket stock, issued to them in Rome, and the managers of their travel bureaus generally send word to Acampa upon arrival at Halifax as to what passengers they have booked and ticketed.

James McNeill of the New York City sales staff meets the passenger liners for **Northwest Airlines** in addition to his regular sales work and finds the assignment worthwhile.

Walt Stewart, agency representative, is **Capital Airlines'** pier man, and he reported a 100% gain in passenger bookings from the steamships last year over 1949. Capital has gone after this business by means of advertisements appearing weekly in the foreign editions of New York newspapers. Capital's aircoach service is especially attractive to passengers from dollar-short countries, and Stewart says most such passengers specifically request this service.

Exchange Problem

This lack of "hard" money in the wallets of European nationals is making the pier business far less lucrative for the airlines than it might otherwise be, for aliens traveling beyond New York generally arrive holding railroad or bus tickets for their onward transportation and rarely hold air transportation, exchange orders or vouchers. Result is that most of the business sold on the docks must come from returning Americans or naturalized citizens of the U. S.

For competitive reasons, the airlines do not have much to say about the revenues derived from the New York pier solicitations, but Eastern has puts its figure at "several thousands of dollars a month," TWA has said it averages from $500 to $700 a month, and Northwest said its 1950 average was from $3,000 to $4,000 a month.

CAB CALENDAR

March 6—(Docket SR-7-201) Oral argument before the Board in Civil Aeronautics Administrator vs. Aviation Corporation of Seattle, b/b/a Westair Transport. 10 a. m., Room 5042, Commerce Building, Washington, D. C. Postponed from January 30.

March 6—(Docket 4786) Hearing in DC-6 Daylight Coach-Summer Excursion Fares Case (National Airlines-Eastern Air Lines). Tentative. Examiner R. Vernon Radcliffe. Postponed from February 20.

March 19—(Docket 4603) Hearing in North Central Route Investigation Case. Tentative.

April 2—(Docket 2849 et al.) Hearing Big Four Mail Rate Case. Tentative. Examiner Edward T. Stodola. Postponed from March 5.

June 18—(Docket 4059 et al.) Hearing in CAB investigation of airline tariff liability rules. Tentative. Examiner R. Vernon Radcliffe. Postponed from April 19.

Over the Counter

Sales Promotion

DELTA Air Lines, which frequently comes up with novel advertising ideas, has added another one. It has figured out a way to get its name prominently before almost every spectator at Miami's swank Hialeah race track at minimum cost. Fans who leave their seats to place bets have been in the habit of leaving hats, coats, neckties and anything else tied to their chairs to indicate they were reserved. Delta designed an ad reading like a "seat occupied" card for use in the *Daily Racing Form*, so that fans could fold up the sheet and leave the Delta ad in their seats when away making bets. In not-too-fine print the ad mentions Delta's Miami-Chicago DC-6 service. . .

We received an unusual Valentine card from **TWA's** Washington office. Printed in a big red heart on the cover was "February 14 is Valentine's Day but . . ." On the inside the sentence continued: "February 15 TWA inaugurates Flight 219 non-stop Constellation to Chicago then to Kansas City." An eye-catcher . . . "Ability and Dependability" is the latest of **United Air Lines'** pamphlets on improved schedule performance. UAL has also issued a new travel folder featuring five winter holiday tours to the southwest desert country and California.

Scheduled airlines, through **Air Transport Association**, will spend $100,000 in promotion of air parcel post and air mail during 1951, bringing to $250,000 the amount spent for such promotion since September, 1948, when parcel post service started.

Passenger Service

NATIONAL Airlines is trying two means of improving baggage handling. Both are aimed at reducing mishandlings and at the same time speeding the handling process. We asked NAL for some information and have received the following:

"The first idea is the use of flight discs in checking baggage. These are for use at stations where baggage is checked for several flights at one time and there is inevitable confusion on the part of baggage handling personnel as to which bags go on what flights. Sometimes delays are incurred because each baggage tag has to be carefully inspected to determine the destination and flight number.

"The flight discs are circular pieces of cardboard of distinctive colors with holes cut in the middle so they can be slipped down the string of a baggage tag to rest against the tag itself. The purpose of the disc is to enable baggage handlers to distinguish at a glance all the baggage checked for a specific flight, the flight having a distinctive colored disc.

"It is still necessary, of course, for cargo handlers to determine where each bag is going and to load it on the proper section of the cargo bin. However, when he is getting the baggage from the ticket counter to assemble it on trucks for carriage to the airplane, he doesn't have to worry about destination or flight number provided he knows the proper colored disc for the flight. He simply grabs all the bags out of the baggage cart behind the counter that have the proper colored disc. At the airplane the baggage is sorted by destination.

"The second innovation is a similar one designed to allow cargo handling personnel to distinguish close connection baggage at a glance. This is an oblong piece of cardboard which has the red ink wording 'Close connection—rush' printed on it. A hole in the center of the card allows it to be slipped, like the flight discs, down the string of the baggage tag.

"When a connection is close at a destination city, the connecting flight is sometimes delayed because of the difficulty of separating a passenger's baggage from all the rest that arrives on the plane with him, or the passenger misses his connection. We hope with this little gadget to reduce the number of missed connections and delayed flights."

We commend National for attempting to do something about one of the airlines' more troublesome problems.

Traffic and Services

PAN AMERICAN World Airways on Mar. 7 replaces DC-4's with Stratocruisers on service from west coast to Australia, two round-trips weekly via Hawaii, Canton Island and the Fijis. . . . **Scandinavian Airlines System** on Feb. 27 opened service between Stockholm and Santigo, Chile, via Copenhagen, Geneva, Lisbon, Dakar, Recife and Rio de Janeiro . . . **Pan American** has stepped up New York-San Juan service to four round-trips daily . . . PAA and **El Al Israel National Airlines** have signed interline agreement providing for passenger and cargo interchanges at London, Paris, Rome and Istanbul for traffic moving between New York and Lydia. El Al will start scheduled service this spring between New York and Lydia.

—ERIC BRAMLEY

Symbols
of Delta Service
Colonel Delta
Dottie Delta
Along with Spring in the South, two little figures are appearing on Delta ticket counters all over the system.
Let us introduce Dottie, the Delta stewardess, whose friendly smile and helpful attitude are typical of Delta's alert passenger service. The spry looking gentleman with the handlebars is Colonel Delta, an enthusiastic passenger who sells Delta wherever he goes.
Delta
AIR LINES
General Offices: Atlanta, Ga.

AIRLINE PEOPLE

ADMINISTRATIVE

James H. Douglas, Jr., a partner since 1934 in the Chicago law firm of Gardner, Carton and Douglas, has been elected a member of the board of directors of American Airlines, filling a vacancy that had existed for several months. He was Assistant Secretary of the Treasury in 1932 and 1933, and served as assistant chief of staff of the Air Transport Command in World War II.

Catherine Fitzgerald, assistant treasurer of Delta Air Lines and secretary to **C. E. Woolman**, president and general manager, has completed 25 years of service with the company, in recognition of which she was presented with a jeweled watch.

John G. Burnett, who formerly had his own advertising agency in Dallas, has been appointed to the newly created post of advertising manager for Braniff Airways in that city. He will supervise the company's expanding advertising activities in the U. S. and South America and will maintain liaison with its advertising agency, the R. J. Potts-Calkins & Holden Agency, at Kansas City.

OPERATIONS-MAINTENANCE

Capt. Samuel H. Miller has been named Atlantic Division operations manager, acting, for Pan American World Airways. He succeeds **Capt. Harry B. Fleming**, who requested re assignment to flight duty with the Latin American Division. Replacing Captain Miller as Atlantic Division chief pilot is **Kimball G. Scribner**, formerly LAD sector chief pilot.

Miller

Glenn T. Smith has been appointed superintendent of maintenance at Seaboard & Western Airlines' west coast maintenance base. He formerly was chief engineer for The Flying Tiger Line and before that has been with Western Air Lines and American Airlines.

Stanley R. Frenchek has been named as assistant to the superintendent of Pan American World Airways' engine overhaul shops in Miami, succeeding **Martin W. Taylor**. The latter has been recalled to active duty by the Air Force. Franchek joined PAA's accounting staff in 1948 and was transferred to the cost analysis section shortly thereafter.

George E. McCullough, formerly assistant to the operations manager for American Airlines at La Guardia Air-

port, has taken over the post of superintendent of training, Flight Division. An 11-year AA veteran, he will handle administrative work for the expanded ground school training of flight engineers and their up-grading to first officers, and will help standardize flight division training procedures in AA's four regions.

TRAFFIC & TALES

Karl P. Hughes, a veteran of 14 years with United Air Lines, has been named to head up the agency and interline sales department at the company's executive offices in Chicago. He replaces **Don Wilson,** who resigned to join Pan American-Grace Airways in New York.

Edwin F. Applegate has been named district sales manager for Braniff Airways at Los Angeles. He had been associated with an airline in Ecuador before joining Braniff

Applegate

William J. Glennon has resigned the post of senior sales representative for Northwest Airlines in Chicago. His future plans were unannounced.

Vincent M. Burke, has been named manager of tour and foreign travel in the Chicago area for United Air Lines. He formerly operated his own travel bureau, the All-Travel Agency, at Wilton, Conn.

W. W. Spradley has been named superintendent of reservations and reservations control for Pioneer Air Lines with headquarters in Dallas. He joined Pioneer in 1948 and last year was made western regional traffic and sales manager.

George Zettler has been appointed air-freight sales manager for The Flying Tiger Line in the Rocky Mountains area, with headquarters at Stapleton Airfield, Denver.

Skipper Russell Maxwell has joined the American Airlines sales staff in Chicago, assigned to special convention groups. She's one of the company's three women sales representatives.

Louis J. Garcia, formerly in the publicity department of an American-Grace Airways, has been appointed director of special features.

Norton H. Jonathan, Kansas City newspaperman, has been appointed assistant to the director of publicity for Mid-Continent Airlines. He succeeds **James G. Swartz, Jr.,** who resigned to join a KC public relations firm.

L. A. Person has been promoted from manager of schedules and tariffs to the post of traffic manager with Braniff Airways. **Dick McGrew,** formerly assistant manager of schedules and tariffs, moves up to the new position of supervisor of schedules and tariffs.

Airline Commentary

By Eric Bramley

IN MID-JANUARY, a well-dressed gentleman stopped an Eastern Air Lines stewardess on the street in Atlanta. "I want to give you $20 to start a memorial fund for that stewardess who lost her life the other day, saving people in that plane accident," he said. "I'm willing to give another $80 later."

The EAL stewardess forwarded the money to National Airlines, where Mary Frances Housley had died Jan. 14 trying to save a baby from the DC-4 which had skidded through the fence at Philadelphia and caught fire.

From this, and other unsolicited responses, plus the earnest desire of National to honor "Frankie" Housley, a genuine heroine if we've ever heard of one, was started the Mary Frances Housley Memorial Fund. It is well to remember that she had already helped several people from the plane—she could have jumped clear and still have been a heroine. Instead, she sacrificed herself trying to save the life of a child.

National didn't want to erect a thing of stone in her honor. The memorial should fit the act. Located in Miami is the Variety Children's Hospital, dedicated to saving the lives of children. It was decided that the memorial fund proceeds will be used for the building of a nurses' home at the hospital. It will be dedicated as a living memorial to Miss Housley and will symbolize the devotion to duty of all airline stewardesses.

Would you like to contribute? We have offered, and have been authorized, to accept contributions and to forward them to the proper authorities. Make your checks payable to C. B. Chinn, treasurer of the fund, and send them to us at AMERICAN AVIATION, 1025 Vermont Ave., N.W., Washington 5, D. C.

There's no high pressure attached. Fifty cents is as welcome as $50. We just happen to think that it's the most worthwhile cause that has come along in a number of years. We want to see the fund assume sizable proportions.

•

We recently attended a sneak preview of MGM's movies "Three Guys Named Mike," and we think all you airline people will want to see it. It's built around the experiences of American Airlines' stewardesses, particularly "Pug" Wells (the AA boys call it "the world's longest commercial"). It was a relief to see an aviation movie without crashes, tense moments, or even a rough trip. And there are plenty of laughs. The best shot, for our money, was made with a camera mounted under the rear fuselage of a Convair, showing a landing at Chicago. If we have one small criticism, it's that a better job could have been done in casting the man who played C. R. Smith, AA's president. Anyway, it's a good movie—go see it.

•

Few honors have ever gone to airline men like the one conferred on **Jack Keegan,** TWA's district sales manager for Lebanon, Syprus, Syria and Jordan, based in Beirut, Lebanon, in the Middle East. Last Oct. 28, King Abdullah I, King of Trans-Jordan, conferred on Keegan the title of Bey, first class. He is believed to be the only American ever so honored in the Arab world, at least in the Middle East. Being made a Bey is something like being knighted in England. It's a very important rank.

Now Keegan can be called—and is called—Jack Bey or Keegan Bey. Arabs bow to him and he really rates high. King Abdullah gave him an inscribed scroll in Arabic and a solid gold inscribed cigarette case. Keegan is getting kidded a lot about the honor, but in the Middle East it's not a kidding matter. He ranks as a Very Important Person.

•

Some time ago, Patricia Patterson, blonde 22-year-old daughter of W. A. Patterson, United Air Lines' president, quietly, and without father's knowledge, got her private pilot's license. Now she's gone and done it again—decided to become a stewardess. She applied and was accepted—only it wasn't at UAL's school. It was American's. She graduated recently and is based in New York, from where she'll fly on C. R. Smith's Flagships, which, according to the maps, compete in certain areas with Patterson's Mainliners. Being a president's daughter puts a couple of strikes against you when you want to get into the business. We congratulate Miss Patterson for her initiative and wish her luck.

U. S. Domestic Airline Traffic for December, 1950

AIRLINES	REVENUE PASSENGERS	REVENUE PASSENGER MILES	AVAILABLE SEAT MILES	PASSENGER LOAD FACTOR %	MAIL TON-MILES ***	EXPRESS TON-MILES	FREIGHT TON-MILES	TOTAL TON-MILES REV. TRAFFIC	AVAILABLE TON-MILES FLOWN	% AVAILABLE TON-MILES USED	REVENUE PLANE-MILES	SCHEDULED MILES	% SCHEDULED MILES COMPLETED
American	302,994	156,418,000	216,842,000	72.13	1,421,465	1,079,098	3,552,064	21,324,342	29,646,534	71.93	5,165,925	4,982,677	98.76
Braniff	55,405	19,418,000	33,664,000	57.68	159,357	140,202	176,116	2,332,501	4,416,431	52.81	975,826	946,431	99.21
Capital	124,368	40,642,000	74,231,000	54.75	196,133	228,222	595,837	4,906,175	10,526,425	46.61	1,958,571	1,946,936	93.64
Caribbean	6,194	503,000	1,227,000	40.99	1,378	. . .	2,497	44,442	121,885	36.46	47,224	47,149	100.00
C & S	29,751	11,095,000	18,585,000	59.70	75,177	86,204	80,162	1,305,211	2,274,853	57.38	649,001	654,270	98.07
Colonial	14,792	3,821,000	8,351,000	45.75	11,388	9,877	11,097	416,413	982,933	42.36	287,549	299,837	95.22
Continental	19,867	7,386,000	15,273,000	48.36	26,811	21,177	53,234	806,960	1,592,308	50.68	543,288	493,037	99.76
Delta	59,475	27,842,000	46,051,000	60.46	176,983	139,815	344,184	3,337,616	5,929,386	56.29	1,293,176	1,259,041	97.38
Eastern	240,226	113,636,000	187,313,000	60.67	607,147	622,756	467,088	13,520,109	24,764,134	54.60	4,455,680	4,440,874	95.23
Hawaiian	24,479	3,517,000	5,783,000	60.82	6,873	11,223	54,579	354,742	668,048	53.10	263,432	206,562	97.91
Inland*	7,511	2,970,000	6,124,000	48.50	20,809	9,091	13,284	327,520	692,772	47.28	252,450	250,253	96.87
MCA**	30,008	9,220,000	17,342,000	53.17	39,740	33,016	55,278	1,009,843	1,890,935	53.40	693,271	654,287	99.66
National	41,391	27,281,000	45,136,000	60.44	51,948	41,034	256,139	3,132,368	6,029,631	51.95	1,068,685	991,456	97.00
Northeast	27,319	5,547,000	11,223,000	49.43	16,303	25,472	24,462	580,539	1,122,322	51.73	358,459	353,281	94.48
Northwest	46,686	32,554,000	63,610,000	51.18	338,042	301,805	532,264	4,638,254	8,016,055	54.49	1,335,673	1,388,633	93.34
Trans Pac.	9,913	1,156,000	2,428,000	47.61	. . . .	163	1,641	89,598	213,861	41.90	86,719	72,182	100.00
TWA	139,138	100,583,000	159,240,000	63.16	1,217,148	989,162	1,521,936	13,370,936	21,759,304	61.45	4,115,211	4,109,741	95.79
United	190,991	118,107,000	169,899,000	69.52	1,764,165	1,371,148	2,237,872	16,685,269	26,444,901	63.09	4,419,124	4,310,998	97.01
Western*	44,894	16,802,000	28,067,000	59.86	109,248	51,869	52,377	1,817,287	2,997,790	60.62	700,545	686,124	98.50
TOTALS	1,417,402	698,498,000	1,110,389,000	62.90	6,240,015	5,161,334	10,032,111	90,000,125	150,090,513	59.96	28,669,809	28,101,774	96.67

* Operations of Western and its subsidiary, Inland, should be considered as consolidated, although reports are filed separately as shown here.
** Figures do not include operations of feeder segment (Route 106) recently awarded MCA by CAB in the Parks Air Lines Investigation Case. Figures covering operations of Route 106 are carried separately on feeder airlines summary sheets.
*** Includes air parcel post.

U. S. Feeder Airline Traffic for December, 1950

AIRLINES	REVENUE PASSENGERS	REVENUE PASSENGER MILES	AVAILABLE SEAT MILES	PASSENGER LOAD FACTOR %	MAIL TON MILES	EXPRESS TON-MILES	FREIGHT TON-MILES	TOTAL TON-MILES REV. TRAFFIC	AVAILABLE TON-MILES FLOWN	% AVAILABLE TON-MILES USED	REVENUE PLANE-MILES	SCHEDULED MILES	% SCHEDULED MILES COMPLETED
All American	10,437	1,458,000	5,009,000	29.12	5,649	14,688	. . .	162,976	572,407	28.47	238,503	257,747	90.92
Bonanza	1,920	487,000	1,655,000	29.42	603	257	905	53,675	186,357	28.80	80,313	78,864	99.37
Central	1,344	220,000	1,912,000	11.51	2,070	. . .	. . .	24,317	215,429	11.29	139,100	140,944	98.56
Empire	2,855	600,000	2,064,000	29.07	3,584	1,527	. . .	62,382	203,642	30.63	98,233	96,043	39.70
Frontier*	6,711	1,799,000	7,529,000	23.89	11,349	7,765	13,586	213,794	631,798	33.84	375,830	379,812	97.32
Lake Cent.**	3,328	2,142,000	3,316,000	56.13	987	13,794	1,958	234,428	572,367	40.96	200,154	116,932	82.63
MCA***	3,002	645,000	1,746,000	36.94	1,955	3,480	7,318	74,245	199,527	37.21	83,136	83,948	96.50
Mid-West	413	55,000	390,000	14.10	1,153	. . .	. . .	5,778	42,921	13.44	97,549	113,130	86.03
Piedmont	11,735	2,876,000	6,388,000	45.02	5,681	10,599	11,672	303,141	730,099	41.52	304,208	302,281	96.92
Pioneer	11,793	3,568,000	7,732,000	46.15	11,404	5,460	10,958	385,733	773,263	49.88	322,193	295,419	99.70
Robinson	4,724	753,000	2,045,000	36.82	3,074	6,639	3,893	82,714	193,154	42.82	102,976	114,456	86.31
Southern	4,955	927,000	3,928,000	23.60	8,437	6,422	. . .	103,021	361,045	28.53	190,324	199,200	93.78
Southwest	9,535	1,836,000	3,888,000	47.22	4,935	5,715	8,555	203,345	444,384	45.76	185,160	199,514	90.66
Trans-Texas	6,709	1,624,000	5,735,000	28.32	6,042	4,872	5,877	179,769	573,565	31.34	273,126	271,250	99.76
West Coast	3,969	558,000	1,849,000	30.18	784	1,196	2,016	55,674	164,445	33.86	88,055	95,170	90.94
Wiggins	302	27,000	210,000	12.86	165	. . .	. . .	2,646	21,740	12.17	52,511	80,522	65.21
Wis. Cent.	3,636	573,000	1,365,000	41.98	4,675	4,193	. . .	62,631	141,546	44.25	170,875	184,512	92.61
TOTALS	87,863	20,143,000	57,261,000	35.18	73,047	86,607	66,738	2,210,269	6,027,689	36.66	3,002,796	3,009,744	93.95
						Helicopter Mail Service							
HAS	. . .	. . . .	. . . .	. . .	2,387	. . .	. . .	2,387	6,112	39.07	29,437	30,766	95.68
Los Angeles	. . .	. . . .	. . . .	. . .	4,289	. . .	. . .	4,289	11,730	36.41	27,427	29,556	90.96

* Formerly Challenger Airlines and Monarch Air Lines. Companies have merged and are now operating under name of Frontier Airlines, Inc.
** Formerly Turner Airlines.
*** Figures cover feeder segment recently awarded MCA by CAB in the Parks Air Lines Investigation Case.

U. S. Domestic Airline Traffic for Calendar 1950

AIRLINES	REVENUE PASSENGERS	REVENUE PASSENGER MILES	AVAILABLE SEAT MILES	PASSENGER LOAD FACTOR %	MAIL TON-MILES ***	EXPRESS TON-MILES	FREIGHT TON-MILES	TOTAL TON-MILES REV. TRAFFIC	AVAILABLE TON-MILES FLOWN	% AVAILABLE TON-MILES USED	REVENUE PLANE-MILES	SCHEDULED MILES	% SCHEDULED MILES COMPLETED
American	3,485,173	1,745,433,000	2,505,037,000	69.67	10,098,259	7,481,535	35,304,598	221,816,322	332,270,716	66.75	58,276,282	59,139,207	95.89
Braniff	641,628	218,578,000	395,410,000	55.27	1,308,480	1,064,368	1,956,236	25,261,614	51,293,726	49.24	11,316,579	11,196,839	98.70
Capital	1,405,814	429,729,000	798,005,000	53.85	1,532,246	2,288,458	8,586,983	53,530,477	107,617,201	49.74	21,611,128	21,372,499	96.28
Caribbean	73,245	5,909,000	14,112,000	41.87	10,313	. . . .	26,335	511,962	1,382,231	37.03	555,951	556,892	99.05
C & S	331,431	118,131,000	209,814,000	56.30	608,040	730,012	893,320	13,562,028	24,685,452	54.94	7,436,139	7,513,923	97.83
Colonial	191,904	49,417,000	100,038,000	49.39	94,717	84,847	109,910	5,190,884	12,053,568	43.05	3,454,862	3,569,119	95.88
Continental	208,605	74,288,000	168,067,000	44.20	205,955	114,833	498,873	7,935,116	17,490,919	45.36	5,948,253	5,793,065	99.56
Delta	644,284	285,384,000	491,032,000	58.11	1,251,009	1,077,385	3,161,596	32,963,112	64,534,017	51.07	14,498,376	14,298,432	98.48
Eastern	2,638,950	1,229,428,000	1,992,628,000	61.69	5,011,147	4,390,971	9,751,213	144,874,447	275,493,699	52.58	52,266,663	51,156,516	97.84
Hawaiian	329,249	43,378,000	66,564,000	65.16	54,875	118,033	524,473	4,249,553	7,434,413	57.15	3,024,333	2,463,530	98.25
Inland*	91,545	35,917,000	69,130,000	51.95	134,683	71,976	163,574	3,816,093	7,716,360	49.45	3,074,225	3,143,537	97.67
MCA**	350,354	104,561,000	196,762,000	53.14	330,270	246,372	519,972	11,117,384	21,827,230	50.93	8,408,901	8,271,294	98.64
National	407,156	256,083,000	477,825,000	53.59	636,988	605,779	2,912,976	30,197,658	63,914,469	47.24	11,765,977	11,061,854	97.24
Northeast	373,385	71,127,000	136,810,000	51.98	121,244	187,442	298,415	7,099,518	13,741,435	51.66	4,235,126	4,322,612	92.57
Northwest	803,133	513,088,000	903,516,000	56.78	2,578,253	2,139,416	7,115,826	61,746,439	115,114,802	53.63	19,735,211	19,163,280	96.33
Trans Pac.	93,597	11,840,000	24,629,000	48.07	. . . .	867	14,093	941,116	2,068,986	45.50	888,467	680,054	99.57
TWA	1,587,309	1,118,184,000	1,708,552,000	65.44	9,120,395	6,421,636	13,804,122	136,815,605	224,357,876	60.98	46,242,207	46,481,975	97.04
United	2,479,121	1,424,848,000	2,053,199,000	69.39	12,439,582	9,215,794	28,034,278	186,310,120	315,309,490	59.08	53,676,807	52,921,243	97.99
Western*	527,079	197,209,000	344,939,000	57.17	843,491	508,343	697,894	20,831,377	36,798,702	56.74	8,708,410	8,337,816	97.56
TOTALS	16,662,962	7,932,532,000	12,656,069,000	62.67	46,379,941	36,748,067	114,374,687	968,820,825	1,695,105,292	57.15	335,123,897	331,443,687	97.21

* Operations of Western and its subsidiary, Inland, should be considered as consolidated, although reports are filed separately as shown here.
** Figures do not include operations of Feeder segment (Route 106) recently awarded MCA by CAB in the Parks Air Lines Investigation Case. Figures covering operations of Route 106 are carried separately on feeder airlines summary sheets.
*** Includes air parcel post.

Sperry Pattern Gives 'Texture' to Runways

. . . on trial at three New York airports

By KEITH SAUNDERS

WHATEVER final form the international standard for runway markings as a visual landing aid may take, the odds today are in favor of a system patterned somewhat after the markings being tested experimentally at MacArthur Airport, Islip, Long Island, and at La Guardia and Newark airports.

It's a subject on which there has been considerable study, for electronic aids do not take the place of the pilot's own vision in those last seconds before reaching the runway threshold, and they need to be augmented by visual markings that will afford the pilot data as to height, distance and attitude in a quick and normal manner during the transition from instrument to visual flight.

That's what the runway markings now under evaluation attempt to do.

The system discussed here is patterned after one developed several years ago by Dr. E. S. Calvert, British civilian scientist with the Royal Aircraft Establishment at Farnborough, England. Sperry Gyroscope Co.'s flight research department made certain modifications to the system and made an experimental installation at MacArthur Airport.

Pilots Enthusiastic

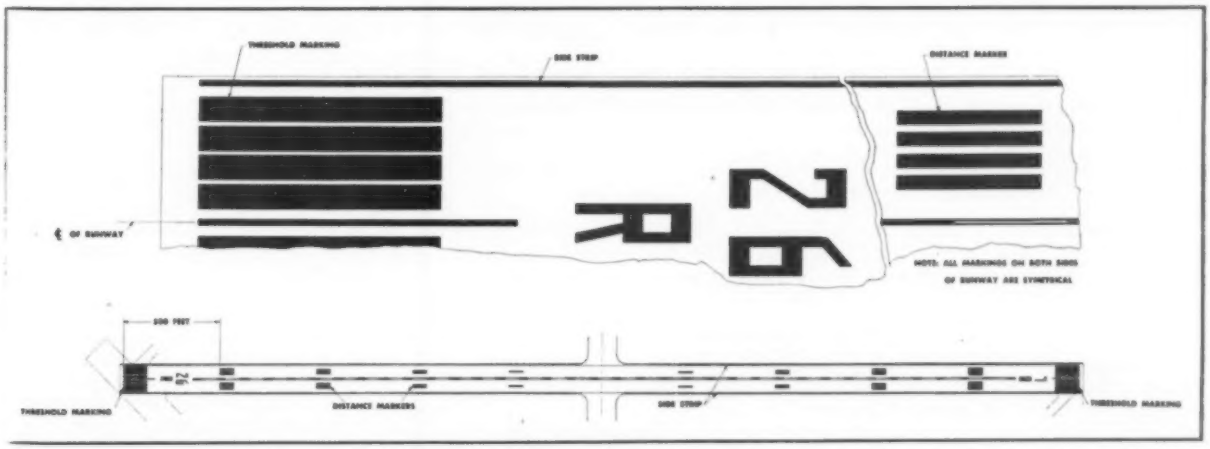
Subsequently, pilots who tested the system were so enthusiastic about it that the Civil Aeronautics Administration and the Port of New York Authority became interested, with the result that last fall similar markings were painted on both ends of the instrument runway at La Guardia and the approach end of the instrument runway at Newark. There has been insufficient time for a real evaluation of the latter installations, but reports to date are most favorable.

When viewed in clear weather, the modified Calvert markings are unimpressive. They look to be nothing more than stripes painted on a runway and appear to have no more useful function than to increase the distance from which the runway can be spotted by the pilot of an approaching plane. It's not quite that simple, however.

The problem was to give "texture" to the runway so as to assist the pilot in making judgments of position, attitude and direction of motion on final approach. Tied in with this was the discovery that at low heights the pilot oftens stares straight ahead for quite a few seconds, and during this period the most important impressions he receives are obtained from the kinematic qualities (impression of motion) of the visual field.

Calvert's Theory

Dr. Calvert calls his theory of visual judgment the "parafoveal streamer theory," the parafovea being the "corner" or "tail" of the eye. He reasoned that during the last 150 feet or so of letdown, while the pilot is staring straight ahead with his



Runway Markings—Calvert system of runway markings, as modified by Sperry Gyroscope Co. are shown (upper right) as they appear in experimental installation at MacArthur Airport. Above drawing, taken from engineering blueprint, shows further modifications designed to make the system even more effective.

AIRPORT NEWS DIGEST

Security Measures: Without awaiting specific recommendations from the Office of Civilian Defense, the management at Sky Harbor Airport, Phoenix, has acted to tighten security at the field as a precaution against possible sabotage or damage to aircraft and property. The entire field has been fenced, the gates are locked at night, the fuel dump is floodlighted at night, and an armed patrol is maintained.

Anyone desiring to enter the field between 7 p. m. and 7 a. m. must go to the gate directly north of the control tower, where they push a buzzer connected with the clearance office. When a guard comes to the gate, proper identification must be made and the nature of business stated. A log of entries and departures is kept by the patrol. Fingerprinting, oaths of allegiance and identification cards for airport employes also will be required soon.

The security measures do not apply to visitors to the terminal building area, provided they stay behind the fences.

All airports having real or potential military importance might well consider similar security measures.

Don't Get Excited: Cities in need of airport funds shouldn't get excited over the Congressional bill (H. R. 2466) which would amend the Federal Airport Act to permit cities to borrow funds from the Reconstruction Finance Corp. to match Federal-aid airport grants. For one thing, the RFC is under heavy fire just now and any proposal to give it additional lending powers will meet with tough sledding in Congress. Furthermore, there's an increasing tendency on the part of the Congress to cut to the bone all expenditures on airports except in the case of fields recognized as militarily important.

TERMINALS

• **Capital Airlines and United Air Lines** have moved their ticket counters and offices into the new addition to the administration building at Youngstown (O.) Municipal Airport.

• **Award of a $225,000 contract for improvements** to the Boise, Idaho, air terminal was held up when all six bidders insisted on escalator clauses as protection against rising costs.

• **City of Cleveland has named Outcalt, Guenther & Associates** as architects for new $4,000,000 administration building at the municipal airport. Firm has been instructed to confine its work to preliminary studies and surveys until CAA has formally approved city's application for matching funds.

• **Preparation of the site for $400,000 terminal building** at Charlotte (N. C.) Municipal Airport is expected to get underway in March. Entire project, including site clearance, will cost over $800,000.

• **A $75,712 bid for construction of a one-story** administration building at Vermillion County Airport, Danville, Ill., has been approved.
• **Riverton, Wyo., has dedicated** its $32,000 airport administration building.

AIRPORT BOND ISSUES

• **Los Angeles is planning to submit** a $14,500,000 airport bond issues to the voters in the May election. C. S. Thomas, a director of Lockheed Aircraft Corp. and former member of the L. A. Board of Airport Commissioners, has accepted chairmanship of the airport bond campaign committee.

• **A friendly suit seeking to establish right** of the Tri-State Airport Authority of Huntington, W. Va., to issue $600,000 in revenue bonds to finance completion of the Tri-State Airport has been docketed for hearing in the State Supreme Court.

RUNWAYS, GRADING

• **Aviation Committee of the Atlanta City Council** has approved an immediate start on construction of the new $1,746,000 NE-SW runway at Atlanta Municipal Airport.

—KEITH SAUNDERS

eyeballs fixed, he derives his impressions of height and direction mainly from two sources:

1. The pattern formed by the paths which the retinal images of the runway lights or markings trace out on the parafovea, and

2. The velocity of the images along these paths.

Having established a symmetrical streamer pattern, the pilot, Calvert theorized, then stares fixedly ahead at the origin of the streamer pattern as revealed by the radial streamers and notes consciously or subconsciously the rate at which the streamer velocities increase. This rate of increase tells him his rate of descent because the streamer velocity at a given point in the visual field is inversely proportioned to height, provided the forward velocity of the aircraft is constant.

The parafavea, it has been found, is very sensitive to the motion of objects in the visual field and is able to detect small departures from a symmetric pattern.

This theory of parafoveal vision led Calvert to the conclusion that runway markings of large size should be effective in providing visual landing aid to pilots by day, and this has been amply confirmed by flight tests. Such markings, of course, have become more urgently needed as airports have become larger and the vast featureless expanses of concrete have robbed pilots of the texture needed for making judgments in those last critical moments before touchdown.

Sperry's System

Dr. Calvert devised a system of runway markings which he felt would be most useful in this connection, and Sperry made certain modifications in the markings at MacArthur. The latter system consists of:

- Large cross bars spaced at 500-foot intervals along the first third of the runway,
- A center line,
- Edge lines,
- Guide lines.

The largest of the cross bars, marking the runway threshold, is made up of five blocks of stripes, each block 6½ feet wide and 50 feet long, there being five such blocks on either side of the center line. To save money, the bars were made up of a number of standard six-inch stripes which could be applied by machine, there being six such stripes in each bar instead of the bars being painted solid as in the original Calvert system.

After the threshold markings are passed, the remaining cross bars serve as distance markers and consist progressively of three blocks on each

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side of the center line, two blocks on each side of the line, and one block on each side, all of the latter being 40 feet long.

Proposed Improvements

On the basis of experience with the system over a period of months, Sperry has now worked out a further modification of the MacArthur layout which is expected to make it even more effective. Changes include:

- Lengthening of the threshold stripes and distance markers from 50 and 40 feet to 125 and 75 feet, respectively;
- Removal of the intermediate stripes to simplify the layout and thus reduce cost, it being felt that the broken center line and distance markers provide adequate texture;
- Addition of the ANC numbers to identify the runway;
- Eliminating the six-inch stripes now used and making the bars wider and solid to provide more contrast to the surrounding area, and
- Addition of another distance marker to provide identification for the first and last 2,000 feet of runway instead of only 1,500 feet as at present.

Another proposed change is the dropping of the specifications for reflective paint (glass beads) which was used on the MacArthur installation, because of:

(a) Its high cost.

(b) Its dull white appearance in daylight.

(c) Its poor reflective quality for aircraft application.

Paint Problem

No ideal paint has been found for runway markings of this type, although the problem is getting attention both in this country and in Great Britain. The paint ideally should meet a number of difficult conditions. For example:

1. It should be as white as possible when applied and should not weather to a dull gray.
2. It should be non-skid.
3. It must have excellent wearing qualities.
4. It must be easily renewed.
5. It must be economical.
6. It should be capable of being applied to a thickness greater than the normal depth of water film on the runway during moderate rain.

Of course, the broader areas painted solidly with paint as now proposed by Sperry will cost considerably more to install and maintain than the six-inch stripping making up the hasher marks heretofore used, and the Port of New York Authority for that reason does not intend as of now to change its markings over to the new system. It will consider doing so, however, when the present striping needs refinishing.

Pilot Reactions Good

The Port Authority, incidentally, has received very good pilot reports on the use of its runway markings, as also has the Air Transport Assn.

Capt. Dave Little, supervisor of airways aids for American Airlines, has supervised extensive studies and flight testing of available and proposed runway marking designs and believes that the modified Calvert design now proposed by Sperry "supplies all (the visual indications) we desire in the most economic fashion."

He said his group feel quite optimistic as to the possible adoption domestically and perhaps also internationally of this type of runway marking design, the all-weather flight specialists of ATA and the Air Line Pilots Association being in "quite complete agreement" on the details of this design and the IATA flight technical group understood to be looking favorably upon it.

A top official of CAA's safety operations division likes the Calvert-Sperry system, also, and has given it as his personal view that this system or some improved version of it will eventually be adopted widely.

The new dimensions and pattern of markings were reviewed carefully by an informal working group of interested and technically qualified men before being adopted formally.

This group is headed by Frank Brady of the Air Transport Association's Washington office, and other members include: Bob Roe, chief of Sperry's All-Weather Flight Development Division; and John F. Gill, chief pilot of Eastern Air Lines' eastern region, and Little.

The proposed new system of markings has the additional advantage of lending itself to partial installation, depending upon the needs of a particular airport. In cases where partial installations are made, the recommended order of priority is: 1. Center line. 2. Threshold marking. 3. Edge striping or runway framing. 4. Distance bars.

Air Force Cautious

Meanwhile, the Air Materiel Command of the U. S. Air Force, while manifesting interest in the markings, feels it will be an expensive system to lay out if done with paint, and that it offers inadequate information as to the portion of runway consumed.

The AMC's All-Weather Flying Division, with the support and encouragement of the Aviation School of Medicine at Randolph AFB, will conduct extensive objective testing of at least five different runway marking systems, including the Calvert-Sperry system, and hopes in time to furnish the Air Force with a standard instrument runway marking system.

Currently, both Chicago and Philadelphia are reported to be considering the Sperry design for their instrument runways, and the only foreseeable hitch to wider civil adoption of the new Sperry system would be refusal of Dr. Calvert to agree to the Sperry modifications. There are indications, however, that he may go along with the proposed changes.

CAA AIRPORT GRANTS

For the two weeks ended February 9, Federal-aid airport grant offers totaling $981,543 were made by the Civil Aeronautics Administration to nine communities, as follows, with airport classes in parentheses:

Florida: Imeson Airport, Jacksonville (6), $43,890.

Louisiana: New Orleans Airport (3), $109,100.

Massachusetts: Logan International Airport, Boston (7), $315,000.

Montana: Fort Benton Airport (1), $9,20[illegible].

Ohio: Lakefront Airport, Cleveland (1), $225,000.

Texas: San Antonio Municipal (4), $75,000; Scurry County Airport, Snyder (3), $189,462; Dumas Airport (2), $9,250; Foard Co. Airport, Crowell (1), $5,635.

These raised to 1,643 the total of grant offers made under the Federal Airport Program and boosted to $135,602,887 the amount of Federal funds involved.

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At Newark Airport the Celanese DC-3 heads for the Esso Sign...

When the Celanese Corporation of America's DC-3 comes in to the Newark, N. J., Airport, the ship generally points in the direction of the winged Esso Oval at Newark Air Service, Inc. Chief Pilot Howard Zbornik and Pilot Clint Housel are accustomed to the expert service and high-quality Esso Aviation Products which have distinguished Newark Air Service for more than 20 years.

Long a familiar landmark at one of the nation's busiest airports, Newark Air Service is an approved CAA repair station, and a regular stop for hundreds of private flyers and executives who want to keep their planes ship-shape. Newark Air Service is open 24 hours a day and provides storage and outside parking facilities.

It is a tribute to Esso Aviation Products that Chief Pilot Zbornik keeps an eye out for the Esso Sign whenever he flies. With 17 years of extensive flying experience behind him, he is a good judge of the quality of aviation fuels and lubricants. And Mr. Zbornik's judgment is shared by many leading airlines, aircraft and engine builders, who make Esso Aviation Products their first choice.

Taking time out for a relaxing chat while the DC-3 is being refueled with Esso Aviation Gasoline are (l. to r.) Howard Zbornik, Celanese Corporation of America's Chief Pilot; Clint Housel, Pilot; and Chuck Nelson, Hangar Manager of Newark Air Service, Inc.

C. J. Strickland, President of Newark Air Service, Inc.

ESSO
AVIATION PRODUCTS

WB Forecast Improvements To Benefit Private Aviation

THE Weather Bureau is making a determined effort to improve the forecasting service provided to the aviation industry as a whole and to the lightplane users in particular. None of the improvements made recently or now under way are radical but they are far-reaching and should provide the pilot with better reports and consequently promote more activity in the lightplane field.

Recently the Weather Bureau purchased a Cessna 190 for its own use. With this plane the WB's pilot, George F. Brewster, and D. M. Little, assistant chief of the Bureau made a three-week tour of its regions conferring with private pilots along the way, observing the operation and possible shortcomings of the information being supplied.

Another important phase of the trip was one of indoctrination of the WB personnel in actual flying. In many instances people observing and forecasting weather had never been up in an airplane. Brewster and Little logged some 400 hours' flight time with the Cessna and for a large part of this time were familarizing personnel with flying and the local topography, subjects with which they were often unfamiliar.

Convinced WB Officials

This was only a start but it convinced the WB officials that this is a worthwhile program and one which will bear results.

In its nationwide weather reporting system the Weather Bureau, plus CAA and the airlines, take some 33,000 readings per day on all elements (wind direction, velocity, temperature, clouds, etc.). At the regular stations this has always been done by well-trained observers but in some localities this has not been the case.

More Meteorologists

This year, with fiscal 1951 funds, the Weather Bureau is implementing a program to put qualified meteorologists at all stations to advise pilots about the weather and its implications on their flights. To carry out this program Congress allocated $450,000 in new funds on a continuing yearly basis. Some 600-700 observers will be affected by the program.

In some instances qualified meteorologists have been working as observers at low pay because the openings for professional personnel did not exist. These men will get an increase in pay and remain at the same work. But in most cases the new positions will be filled only after extensive study and tests on the part of current employes or by new personnel brought into the work.

In Arizona the Weather Bureau is working with the Civil Air Patrol to supply all pilots with weather data previously not recorded. The Civil Air Patrol collects weather data in areas not covered by the regular WB service, delivers it to the Phoenix WB center where it is analyzed and useful portions put on the teletype circuits.

Communications costs are a major factor in the reporting program and control the extent of possible reporting. WB officials have discussed with members of the National Association of State Aviation Officials their policy of working out intensified reporting programs in any state where suitable communications provisions can be made.

To facilitate additional weather readings in remote areas the Weather Bureau has developed a small sealed-beam light for checking ceilings up to 3,000 feet along with the help of an inclinometer. Eventually, it is hoped that a kit can be provided to these part-time observers with the sealed beam light, inclinometer, etc., in it.

Automatic Reporting

There are now three automatic weather reporting stations providing information on wind direction, velocity, temperature and barometer reading. WB officials hope that means can be developed to obtain additional data automatically but this has not proved practical as yet. Development work on instruments to accomplish this is now under way.

Another source of improvement in Weather Bureau-state relationships has been the now well-established program of designating one Air Weather Station in each state to work with the director of aeronautics or similar aviation head in coordinating

(*Turn to Page* 50)

CODED	IDENTIFICATION	DECODED	ADDITIONAL EXPLANATION
① PIT		PITTSBURGH, PENNA.	Code letters identifying each airway weather reporting station are given in CAA publication "Location Identifiers."
② S7		SPECIAL NO. 7	Special observations are numbered serially, beginning with 0000 Local Time each day.
③ M3V		CEILING MEASURED 300 FT., VARIABLE	Ceiling and cloud heights are expressed in hundreds of feet, with the letter "V" indicating that the ceiling is variable by the amount reported in "Remarks." Ceiling classification designators are: A - Aircraft B - Balloon E - Estimated M - Measured P - Precipitation W - Indefinite
④		OVERCAST, LOWER BROKEN	Sky Condition symbols are: ⊗ - 0.6 or more of the sky obscured.* ◯ - Clear - less than 0.1 sky cover. ◑ - Scattered - 0.1 to less than 0.6 sky cover. ◍ - Broken - 0.6 to 0.9 sky cover. ⊕ - Overcast - more than 0.9 sky cover. *Less than 0.6 obscuring phenomena is reported in "Remarks." Dark and thin clouds are represented by "+" or "-", respectively, preceding the sky condition symbol. ("+" is not used with "X"). In combination, symbols are reported in descending order of height. Additional layers of clouds may be reported in "Remarks."
⑤ 1½V		1½ STATUTE MILES, VARIABLE	Prevailing visibility is reported in statute miles and fractions, with the letter "V" indicating the visibility is variable by the amount reported in "Remarks."

SIMPLE presentation of data relating to the hourly sequence weather report is presented on a wall chart available from the Weather Bureau, part of which is shown here.

THE Washington View

By Barbara Ward

PRIVATE aircraft production in the coming months will be limited. A stop-gap plan to allow production at a yearly rate of 2500 aircraft for the next three months has been approved by the Air Coordinating Committee and will be recommended to National Production Authority. This would give a yearly total of 886 aircraft below 1950's production of 3,386 personal and executive aircraft. And it covers only the next three months.

CAA Administrator **Donald W. Nyrop** appeared to be verifying the pessimistic outlook for future private aircraft production when, at the Third National Agricultural Aviation Conference at Memphis, February 19, he said, "The job of increasing agricultural production must be done with the equipment already on hand. We must make the best possible use of converted World War II trainers and any other available equipment . . ."

•

This leaves the new Texas A & M agricultural plane, which first flew in December and is expected to receive CAA type certification by April, with only a slim chance of being put into production. CAA, whose funds backed the development work on the aircraft, has offered to make the plans available to any manufacturer who will produce the aircraft. But with present material allocations and military order backlogs, no such godfather exists. Except the crop duster.

Fred Weick, designer of the agricultural plane, agrees that it might be possible for the plane to be sold in "kit" form and assembled at crop dusting bases. The idea has a precedent: over a period of years before the Stearman became available as surplus equipment, the Delta Dusting Division made its own planes. Most crop dusters have the equipment and trained personnel to modify their aircraft; they might assemble one. And the Texas A & M plane seems to be a "natural."

It is simple, made almost entirely of unformed metal sheets or plates, and it uses many standard parts such as the Cessna landing gear, Beech rudder pedals, and a Pastushin Industries seat. Weick believes it could be constructed in any ordinary maintenance shop with the addition of one or two inexpensive tools. A few angle-iron jigs would be required for proper alignment.

Although the advantages of mass production would be lost and man-hours of labor involved would be high in comparison with factory assembly, crop dusters could put their employes to work on it in slack seasons. But the biggest advantage would be that the plane would get into use.

•

Idaho has a unique organization to enlist support for aviation—the Idaho Flying Legislators. Any state representative can be a member if he is an aviation enthusiast with interest in furthering Idaho's aviation development, and is willing to give his moral support to that development. Eight out of ten state legislators are members. One of their future events will be a day at the airport, with a guided tour of airport facilities and a tactical demonstration by a fighter squadron of the Air National Guard.

•

Aircraft owners will be required to send CAA a yearly report of hours flown on each aircraft, if a regulation now circulating for inter-office comment in CAA is formally proposed and adopted. As it is, CAA receives no flying-hour reports on private flying and has no basis for comparing aircraft accident rates and usage except "number of aircraft certificated airworthy."

They also want operators to break down the flying hour reports into hours flown in charter work, solo, training and pleasure flying but are hesitating to ask operators to do this much work, even though it would give a needed picture of civilian operations. What they may not realize is that operators keep a pretty good check on this information to see what is paying off. And they want to know the business trends.

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LOCAL OPERATIONS

(*Continued from Page* 48)

the needs of the operators with the work of the forecasters.

About a year ago the Flight Safety Foundation initiated a program of reporting for private and corporation pilots which was intended to keep the WB abreast of the relationship between forecasted and actual weather. The FSF provided simple postcard forms on which pilots could report to FSF and the WB on discrepancies in forecasts.

In the first year of operation this system produced about 17 reports. At first glance this appears a very small number. Actually WB officials state that this is about the same number of complaints registered annually by the scheduled air carrier pilots. In this light the reporting would appear to be quite effective. Complaints have been investigated and some good has resulted.

Training Aids

Two training aids being circulated by the WB are proving quite popular. One of these is a wall poster called "The Hourly Sequence Weather Report." This two-color poster lists 12 code symbols used in the hourly teletype reports, indicates the general class of information covered by the position (station, type report, ceiling, sky condition, etc.), decodes the example given and supplies related information.

These have been made available to all operators free of charge through the NASAO. Posted on the wall of the operations office, in the hangar or in other prominent locations they should help make the pilots more aware of weather data.

The other useful item is a pocket-sized booklet called "In-flight Weather," a 25-page illustrated booklet. It tells a little about cloud formations, how cloud covering is classified, a little about ice formation, thunderstorms, lightning, turbulence and precipitation. Almost entirely a pictorial presentation, it is simple enough to remember without much effort.

Additional Programs

The Weather Bureau has other programs under way of service to all users of weather information but primarily aimed at airline regularity. Typical of these programs, which will not be dealt with in detail, is the installation of dual transmissometers on a trial basis to get more accurate visibility data, design of a new ceilometer which measures ceiling every 24 seconds instead of every six minutes as currently used and design of a device to measure slant visibility.

Cross-Country

WITH LOCAL OPERATORS

By Page Shamburger

FLORIDA—**Daytona Beach Municipal** has the top-notch boast . . . the airport has not cost the city or the taxpayers a cent in the last five years. The way this works is **J. L. Gresham**, manager, rents all of the buildings on the 'port from the city. Thus he has all the headaches of making the airport pay! He's doing it, too, with 40 planes based there. Bless him in the fact a private plane receives as much respect as an airliner at Daytona. The tower guys and **Vera Self**, a Florida 99'er, are most helpful and also give lightplanes the right-of-way when deserved.

Russ Davis, operator, carries on a still-booming biz with instruction and GI's the big paying end.

Daytona has **Airepair** which specializes in giving nothing but the top-grade maintenance and overhaul work. With an A & E school, overhauls are usually in the class of students doing the work for the price of parts only. With magnafluxing, sandblasting, etc., Airepair is one of the best equipped shops in Florida.

Hurrah for **Craig Field** or Jacksonville Municipal Number 2, as it's known. Craig is all for the private flyer with the best of service, no tower and 4,000-foot runways. The runways are beautiful, it seems the wind blows between the two at all times. **Hawthorne's** branch is run by **Ken Brugh**, one of the nicest guys ever met. ESSO is their product and service is their motto. Hawthorne has 10 T-hangars and one large one—gorgeous sights for storage-hungry eyes. **Hal Allen**, office manager, is one of those strange combinations found only in the flying business. Is an aviation guy all week and a Baptist minister on Sundays. Hal has just taken up the ministry and has been associated with flying schools since before the war. Bet he makes a good preacher, too.

Arthur Stone is the manager of **Stone & Wells** on Craig and said, "The business could be a lot better, but we are making money." Arthur has a number of very smart promotional ideas including a tag placed in your plane. The tag is quite noticeable and states if the lineboy neglected to clean your windshield, empty your ashtrays, and vacuum your airplane, your gas and oil are free. And, they don't forget.

There's a two-dollar telephone at the gas pit, too, which works swell and completely erases the yelling of NC numbers and gallons of gas to the operator. Everyone storing his plane with Stone & Wells gets free wind-storm and fire insurance, too, and transients can get free transportation to and from town or rent a car directly from Arthur. A full stock of Continental and Cessna parts, too, so what more could you ask?

LEFT to right: Ken Brugh, Hawthorne Flying Service, Jacksonville, Fla.; Bevo Howard, president, Hawthorne Flying Service, Charleston, S. C.; Bud Crockett, Hawthorne Flying Service, Greensboro-High Point Airport, N. C., and Clayton Lemon, Roanoke, Va.

Joe Gray on **Lake City Municipal** has the first school training forestry students how to fly and use an airplane in forestry patrol. The school is the University of Florida's State Forest Ranger Division. It's a big school and a big division, but Joe has only four to be trained this year. He says he can train them in the length of time for a private ticket, but it's much better to have more time.

Last year, Joe and his students located six fire-bugs setting fires and were able to lead a truck in to capture them . . . seems it pays off in many ways. Really sounds like an interesting course with the use of airplanes taught in patrol work, erosion, amount of timber and even planting and seeding.

AERIAL SIGNPOST on the airport at Hawthorne Flying Service, Jacksonville, Fla., points the mileages and compass headings to cities within easy flying range. And it advertises Hawthorne bases at Columbia, Charleston and Greensboro.

Joe Gray is the kind of operator aviation needs, particularly now. He has every imaginable ticket and has been in the business end of flying for 17 years. Joe even taught in primary schools during the war but is quite sincere in saying he is quitting aviation in September unless something happens in the way of contracts. Let's hope something is done to keep people like Joe Gray flying.

Well, one of the best in resort airports was visited and is enthusiatically acclaimed—**Roy and Mary Browning's** Keystone Ranch and Airpark in Keystone Heights. The Brownings are proprietors of an ideal summer and winter haven for the flyer. "The Skytel" is a modern hotel located right on one of the 5,000-foot hard surfaced runways. The ranch is 2,800 acres of natural woodland filled with lakes for swimming and fishing, to say nothing of an abundance of dove, deer, quail, squirrel and duck. Guides are available, and boats or seaplanes are on hand. There are 60 lakes in a 15-mile radius of Keystone, some entirely inaccessible except by air, just loaded with bass and perch. Not only that, but a designated aircraft maintenance inspector and A & E's are on duty to give you any type service needed on your plane; there are also hangar storage, riding horses, and a drive-in-fly-in theatre.

Tallahassee, Florida's Capital, has a lack of private flying most disappointing. **Mitchell Rushing**, top guy in the tower, is one of the swell CAA men going all out to educate private flyers to the fact CAA really wants to help, not put the axe on them. The airport is fully equipped, even to jets using the ILS, but only a one man operation. The city sells gas and handles the storage.

Whiz Holland on **Valdosta** is the originator of the roadable Ercoupe. He seems to have the idea in what is needed to make aviation what it should be. Anyone will admit that a plane stored in the home garage belongs much better than one kept miles away.

On those trips, too, when you have to stop only a few miles from your destination, the roadable qualities would be blessed. The Ercoupe Whiz designed is standard in everything, except wing levers to fold them across the fuselage and a cage for the prop. Because of the prop, approval would have been impossible, so Whiz is hard at it, again. The only thing slowing him down is lack of capital.

His latest brainchild, now in the model stage, is a four-wheeled high wing standard four-place plane. Whiz considers adding another engine, also standard, for the driving.

PEOPLE IN THE NEWS

Alfred P. Frame, vice president of manufacturing and research for Cities Service Oil Co., has been appointed assistant deputy petroleum administrator in charges of domestic industry operations, and **C. Stribling Snodgrass,** vice president of the Bechtel Corp., San Francisco, has been named assistant deputy administrator for foreign petroleum operations.

Robert E. Redding, has resigned his Civil Aeronautics Board post to become associated with the law firm of Chapman, Bryson, Walsh and O'Connell. He will take up offices with former CAB Chairman **Joseph J. O'Connell, Jr.,** Washington resident member of the firm. He had been assistant to former CAB Member **Russell B. Adams.**

Louis W. Goodkind has been appointed acting deputy director of CAB's Bureau of Air Operations. He had served for the past four years as associate director of the now-abolished Bureau of Economic Regulation.

John B. Goodman, assistant manager of publicity for United Air Lines for the past five years and onetime publicity director for the National Aeronautic Association, has been named district representative of the Oil Industry Information Committee of the American Petroleum Institute in New York.

Prof. Daniel C. Sayre, chairman of the Department of Aeronautical Engineering of Princeton University since 1942, has been named director of the newly established James Forrestal Research Center at Princeton.

Robert M. Phelps, former manager of the National Aeronautic Association, has been appointed chief, special events section, office of Press Information, Department of Defense, succeeding **Roosevelt der Tatevasion,** who has returned to active duty as an air Force major. **William Westlake** has been named director of information for the Munitions Board, succeeding **Floyd Brinkley,** and **Max Boyd,** former AF public information officer will become a deputy to **Brig. Gen. Sory Smith,** director of public relations for the Air Force.

Robert M. Critchfield has been appointed assistant general manager of General Motors' Allison Division in Indianapolis. His former position as factory manager of GM's Delco-Remy Division in Anderson, Ind., has been taken over by **W. J. Hulse,** assistant factory manager since 1940.

Howard G. Golem, chief of materiels for Consolidated Vultee Aircraft Corporation at San Diego since 1946, has been promoted to director of procurement. He joined Convair at Buffalo in 1929 and has been connected with its materiel activities since that time.

Golem

Boyd Dahle has been promoted to chief engineer with Pacific Airmotive Corp's Manufacturing Division; **R. M. Francis** has been appointed chief project engineer; **L. W. Reithmaier** has been named chief research engineer, and **B. C. Gay** has been appointed project engineer.

William A. Mara, general manager of Bendix Radio Division of Bendix Aviation Corp. and a member of the board of directors of the Aero Club of Michigan, has been presented an honorary life membership in the latter organization. Active in aviation for 30 years, Mara was onetime Aviation Commissioner of the City of Detroit and was chairman of CAA's Non-Scheduled Flying Advisory Committee in 1949.

L. E. McHaney, formerly contract administrator for the Bureau of Aeronautics representative at Dallas, has joined Texas Engineering & Manufacturing Co as contract administrator.

Ned Root, managing editor of *Air Force* magazine, has been named publicity manager of Lockheed Aircraft Corp.

MILITARY PERSONNEL

Edward C. De Parrie has been named chief accountant of the Propeller Division of the Curtiss-Wright Corp., reporting directly to **F. H. McFarland,** assistant controller. De Parrie came to Curtiss-Wright from Reaction Motors, Inc., where he was supervisor of cost accounting.

R. L. Clark, former assistant director of the **Ryan Aeronautical Co.** customer service department, has been named assistant production manager, and **J. C. Zippwald,** former field service representative, has been made customer service director. **H. L. Rasp** is manager of the new factory service division, which takes in the former production engineering division.

the bulletin board

Undisplayed Advertising: $1.00 per line, minimum charge $4.00. Cash with order. Estimate 30 capital letters and spaces per line; 40 small lower-case letters and spaces per line. Add two lines if Box Number is included in lieu of advertiser's name and address.

Displayed Advertising: $10.00 per inch for less than 15 inches in one issue or in any 12-month period. For more than 15 inches, $8.50 per inch; more than 30 inches, $8.00; more than 60 inches, $7.50; more than 90 inches, $7.00; more than 120 inches, $6.50. Space units up to full pages accepted in this section for classified-type advertising.

Forms close 20 days preceding publication date. Address all correspondence to Classified Advertising Department, AMERICAN AVIATION PUBLICATIONS, 1025 Vermont Ave., N. W., Washington 5, D. C.

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WINGS OF YESTERDAY

25 Years Ago

February 15, 1926, marked the inauguration of the first contract air mail service by the Ford Motor Company, connecting Detroit with the transcontinental route.

•

A well-known firm of aviation underwriters announced reductions of from 10% to 40% on aviation and aircraft insurance rates and also the acceptance of policies on night operations over regular and properly lighted airways. Policies up to this time had always excluded night flying.

•

Continental Motors Corp., one of the world's oldest and largest exclusive manufacturers of internal combustion engines, was planning to enter the commercial aircraft engine field.

10 Years Ago

(In AMERICAN AVIATION)

Production of 18,000 aircraft in 1941 was forecast by the Aeronautical Chamber of Commerce of America.

•

Manufacturers of light airplanes were faced with a complete shutdown of aluminum deliveries and were seeking to persuade defense officials that lightplanes were essential to the defense program.

•

Plan permitting time purchase payment of air travel on tickets of $50 or more was instituted by 16 U. S. airlines and Trans-Canada Air Lines.

LETTERS

Screen Foreign Dispatchers

To the Editor:

We wish to call your attention to a situation which we feel to be detrimental to the security of United States air commerce overseas.

As you know, operational control of all U. S. air carrier flights, domestic and foreign, is the joint responsibility of the pilot in command and the aircraft dispatcher.

Due to the present unhealthy condition of world affairs, domestic airlines have begun to fingerprint and photograph their personnel in response to the security measures now in effect.

We readily endorse, in fact we invite, screening of all aircraft dispatchers due to the extreme responsibility of their positions. It is to the public interest that this be done.

But the screening now under way is not complete in our opinion for the reasons which follow.

U. S. aircraft dispatcher licenses, issued by our Civil Aeronautics Administration, are also held by some fifty-seven foreign national dispatchers, directly employed by U. S. air carriers engaged in foreign flight operations. These individuals are stationed at various points around the world and responsible for operational control of U. S. flights over various route segments overseas.

Up to this time, nothing has been done to screen these foreign national dispatchers to our knowledge. We feel that their licenses should be immediately suspended until such time as their loyalty to this country can be determined.

We do not feel that a foreign national dispatcher would have any compelling reasons to be loyal to the United States. Yet at this critical time, he has under his control, the lives and property of our citizens, and on many occasions our public and government officials flying on missions vital to the security and welfare of the United States.

W. F. KINNARD, President
Air Line Dispatchers Association
Alexandria, Va.

TECHNICAL LITERATURE

SHOCK MOUNTS: A useful catalog on Vibrashock Met-L-Flex Shock Mounts and Vibration Isolators of the unit type has been published by Robinson Aviation, Inc., Teterboro, N. J.

AIR COMPRESSORS: An interesting 20-page illustrated catalog on air compressors has been released by The Wayne Pump Co., Fort Wayne 4, Ind. The catalog, in addition to providing engineering data and drawings on the Wayne line, also suggests general considerations for use in selecting equipment.

FIBERGLASS DUCTING: A 16-page illustrated brochure on Fiberglass ducting, hose, sleeves and couplings is now being distributed by the Arrowhead Rubber Co., Downey, Calif. Seven solid pages of engineering data including weight, temperature range, working pressure, etc., is provided.

DY-CHEK: Full details on the principles and use of the non-destructive testing of metal with the Dye Penetrant Method is included in a bulletin available from Northrop Aircraft, Inc., 1515 East Broadway, Hawthorne, Calif.

VOLT-AMMETER: Operation and use of the Amprobe, a snap-on volt-ammeter which permits measuring voltage and amperage in electrical circuits without disconnecting wires is described in a 16-page, pocket-size bulletin available from the Pyramid Instrument Corp., 49 Howard St., New York 13, N. Y.

ALUMINIZED STEEL: The corrosion resistance and heat reflectivity of "Armco Aluminized Steel" along with data on mechanical and forming properties, sizes and gages, etc. are discussed in a new 24-page booklet published by Armco Steel Corp., Middletown, Ohio.

FLEXIBLE SHAFTS: Latest developments in flexible shafting including descriptions of the sizes and types available are described in a 12-page illustrated catalog available from S. S. White Industrial Division, 10 East 40th St., New York 16, N. Y. The catalog features a list of "do's" and "don'ts" in flexible shaft usage.

PRESSURE SEALING ZIPPER: Installation procedures for pressure sealing zippers along with detailed drawings and a discussion of the overall subject are included in an eight-page folder available from The B. F. Goodrich Co., Akron, Ohio.

THERMIX: Thermix is the all-inclusive name of the Thermix Corporation of Greenwich, Conn. In a new 30-page illustrated booklet called "This is Thermix," the widespread activities of the parent corporation and its divisions are described. Included are descriptions of Thermix aircraft controls and aircraft seats.

BOOKS

AIRCRAFT ENGINES OF THE WORLD—1950, by Paul H. Wilkinson, Illustrated, 324 pages, published by Paul H. Wilkinson, 225 Varick St., New York 14, N. Y. Price $10.

Paul Wilkinson's seventh consecutive annual on aircraft engines of the World follows the previous pattern and as all the information is in a standardized form it is a useful textbook for industry. There are illustrations of all the current range of U. S. and foreign jet, prop-jet and piston engines and several of the pictures have not previously been published such as the Westinghouse J-34 and Allison J-33 both with afterburners. The U. S. and British sections are the largest but the French references are most frequent than ever before.

The book is overall the same size as the previous ones written by the same author but in the 1950 volume many of the older engines in the 1949 edition have been weeded out. The Russian section contains an impressive range of axials based on German practice and there are pictures and references of the rocketjet engines which are being developed in the USSR.

There are, in all, 30 of the latest turbojets listed, 10 single turboprops and four coupled turboprops. The preface contains a review of present progress and mention is made of a number of future turbine projects with their approximate performance ratings.

—R. G. W.

IN FLIGHT

A PAGE FOR ALL PILOTS

Flying the World's First Turboprop

There seems to be some doubt about which was the world's first turboprop aircraft. In fact this can be established as the British Trent-Meteor which was flown for the first time by Eric Greenwood on September 20, 1945. At the time I flew it, the aircraft had done about 200 hours' flying and 100 hours' ground running.

The Rolls-Royce Trent was a simple development of the Derwent 2 jet of 2,200 lbs. static thrust driving a special Rotol five-bladed prop. It gave 800 bhp. plus 1,000 lbs. static thrust. The airframe was an old Gloster Meteor 1 standard single-place fighter which had seen about 80 hours' combat against the Germans. There were three Trents built—two were mounted in this historic aircraft and the third was cannibalized for spares. It continued flying for many years and was finally writen off by a Navy pilot who smashed those precious props and the aircraft was abandoned.

This aircraft had a tremendous acceleration for takeoff and the Trents were very economical. The "gallons gone" indicator ticked away the fuel very lazily compared with the furious consumption of the standard Derwent jets. The standard engine starter was retained on the Trent and to help take the load off the little motor, the props were turned over by hand to get them moving and helped by hand until the motors could take over.

The engine controls consisted of a throttle and a prop-pitch lever which could be left in a central gate position or, alternatively, it could be used as, in effect, controlling the jet pipe temperature. For best consumption a low r.p.m. and a high jet-pipe temperature was somewhat analogous to high manifold pressure and low r.p.m. with a piston engine.

It was a very heavy Meteor weighing about 14,000 lbs. and the undercarriage was lengthened six inches to provide the necessary ground clearance. It was a very easy airplane to fly generally and the landing presented no problem except that the idling output of the Trent was very high—about 400 lbs. thrust—which meant complete dependence on the brakes after touch down.

—R. G. W.

Two Gals Named Pug—One of the more recent stockholders of American Airlines is Hostess Pug Wells. This was part of her reward for doing a swell job of selling air transportation to a nervous little man on his first flight. He turned out to be a movie magnate and Pug's enthusiasm and mastery of her job gave him an idea for a film on airline hostesses which is now being shown throughout the country. It's called: "Three Guys Named Mike." Pictured above are Pug Wells (left) and her counterpart in the movie, Jane Wyman. Pug hails from Memphis, Tenn. She got her silver wings in September, 1947.

Lightplane Altitude Record Verified

A new official international altitude record of 30,203 feet for Class II aircraft, established by Miss Caro Bayley at Miami on January 4, 1951, has been verified by the Federation Aeronautique Internationale. Miss Bayley flew a standard 1951 two-place Piper Super Cub model PA-18 with an unsupercharged 125-hp. Lycoming engine to exceed the previous record by 5,000 feet which was established last year by Miss Ana Louisa Branger at Washington, D. C.

New Ground Speed and Directional Plotter

True course, ground speed and estimated times of arrival can be computed with a new ground speed and directional plotter announced by C. S. Hammond and Co., Maplewood, N. J. Price $3.50. The plotter is read in conjunction with Department of Commerce sectional and world aeronautical charts. It is designed for use with low-speed aircraft or, by reading a special scale, higher-speed types.

The plotter, of durable plastic, is about 12 inches long and three inches wide. When in use the plotter is kept with the charts and placed on them to read off the navigational data and is especially useful when giving data required for a flight plan in flight.

Making It Easier for Hot-Air Pilots

Hot-air balloon pilots will find it easier to obtain CAA certification if the proposed civil air regulation now being circulated is adopted. Under the new regulation CAR Part 22 would be amended to eliminate the requirements that applicants for hot-air balloon certification pass examination on aeronautical matters such as meteorology, navigation, servicing and operation of airships since these things are not prerequisite to safe operation of this type of balloon.

Because they are inconsistent with the operation limitations of hot-air balloons the requirements for certain minimum experience in instruction and solo flight time and the solo flight to demonstrate skill are also eliminated.

None of these changes relate to free-balloon pilots other than in the hot-air category.

Send Us Your Yarns

Pilot-readers are invited to use this page for airing their views on matters of general interest. Send contributions to In Flight Editor, AMERICAN AVIATION, 1025 Vermont Ave., N. W., Washington 5, D. C.

BOEDY'S ALBUM

Anne Soucek
(Mrs. Romus)
Paterson, N. J.
June 23, 1939

Lee N. Brutus (QB)
Waco Aircraft Corp.
at Paterson, N. J.
June 26, 1939

R. E. "Bob" Hoefflin
Waco Aircraft Corp.
at Paterson, N. J.
June 26, 1939

Karl S. Day (QB)
American Airlines
at Paterson, N. J.
June 27, 1939

Erle W. Miles
Eastern Air Lines
Newark-Baltimore
June 28, 1939

Wayne Thomas
Eastern Air Lines
Newark-Baltimore
June 28, 1939

E. J. "Ed" Foley
Pan American Airways
Baltimore, Md.
June 28, 1939

W. A. "Bill" Wange
Pan American Airways
Baltimore, Md.
June 28, 1939

J. C. "Mitch" Mitchell (QB)
Eastern Air Lines
Baltimore-Newark
June 28, 1939

Jeanette Andre
Wright Aeronautical Corp.
Paterson, N. J.
June 29, 1939

Paul Housel
Quiet Birdman Meeting
Newark Athletic
June 30, 1939

C. W. "Chuck" Yerkes (QB)
N. J. National Guard
Newark, New Jersey
June 30, 1939

G. M. "Gil" Swett (QB)
N. J. National Guard
Newark, New Jersey
June 30, 1939

R. K. "Dick" West
Bakelite Corp.
at QB, Newark, N. J.
June 30, 1939

P. D. "Phil" Lucas (QB)
Bell Telephone Labs
at QB Meeting, Newark
June 30, 1939

V. A. "Vic" Rickard (QB)
Bell Telephone Labs
at QB Meeting, Newark
June 30, 1939

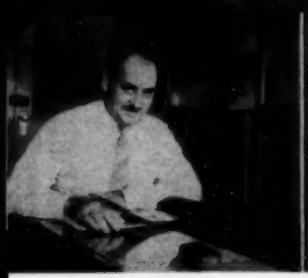
BOEDY'S ALBUM

W. L. "Les" Cramer (QB)
Public Service Gas & Electric
at QB Meeting, Newark
June 30, 1939

R. G. "Bob" Jaekel (QB)
Hadley Field
at QB Meeting, Newark
June 30, 1939

R. C. "Bony" Newman
at QB Meeting, Newark
NAC-Newark, N. J.
June 30, 1939

R. F. "Roy" Rider (QB)
White Flying Service
at QB Meeting, Newark
June 30, 1939

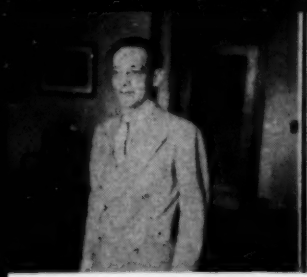


Francis T. Swackhamer
Panair do Brazil
at Paterson, N. J.
July 5, 1939

B. H. "Ben" Gilpin
Bendix Aviation Corp.
Newark-Baltimore
July 5, 1939

Roseanne McQuestion
Civil Aeronautics Authority
Washington, D. C.
July 7, 1939

R. H. "Bob" Hinckley
Civil Aeronautics Authority
Washington, D. C.
July 7, 1939



Samuel E. "Sam" Gates
Civil Aeronautics Authority
Washington, D. C.
July 7, 1939

W. B. "Bill" Inman, Jr.
Eastern Air Lines
Washington-Newark
July 7, 1939

Dan B. Southard
Eastern Air Lines
Newark, New Jersey
July 7, 1939

Foster G. Neff
Wright Aeronautical Corp
Paterson, N. J.
July 8, 1939

J. M. "Pinky" Pincomb
United Air Lines
Newark-Moline
July 9, 1939

Clara Hagg
United Air Lines
Newark-Moline
July 9, 1939

M. J. "Johnny" Griggs
United Air Lines
Newark-Moline
July 9, 1939

Earl W. Fleet (QB)
Transcontinental & West. Air
Kansas City-Wichita
July 11, 1939

Candid snapshots from the famous collection of Kenneth

Day Missing. Do you remember what you did on Sunday, January 7? Did you go to church, a sports event, the movies, out riding, visiting, or just stay home and look at television?

Whatever you did, I hope you enjoyed yourself. For me, I missed January 7, 1951, completely. It simply never existed. It's gone forever.

I've lost days before but I always managed to get them back. This time I didn't. And I'm inclined to blame **Philippine Air Lines** for negligence in this tragic loss. After all, I've only got so much time on this earth and a day is a day no matter how you waste or use it. Suppose I lost 365 days one at a time, that's a whole year.

I was on Philippine Air Lines, that's all I know. The plane left Honolulu at 8:30 p. m. on Saturday, January 6. The next stop was Wake Island at 3:40 a. m. Monday and I know dad-gummed well a DC-6 hasn't got a range of 36 hours. I couldn't sleep that long, anyway.

I've lost a day on two previous occasions while crossing the international dateline westbound, but I always got it back when I returned eastbound by observing two Mondays or two Thursdays, whatever they were. A guy doesn't mind an exchange like that. I'll take two Sundays for no Wednesday anytime.

But on this trip I kept going westward around the globe until I reached Washington, D. C., the starting point. Philippine Air Lines never did a thing about giving me a day back in exchange for the one I lost. To my mind, that's pretty poor passenger service, taking days away from people and not making replacements. Days can be valuable to a guy who's getting older a lot faster than he wants to.

So I'm a day short. Can't even be completely certain when my birthday is now. Can't even be sure that when I

die I'll be dying on the right day. And not a word of apology, explanation or suggestion from PAL. Round-the-world tourists ought to be warned what they're getting into.

Suppose a guy made 365 westbound trips around the globe, missing a day on each trip. How could he tell how old he was? Or, if a guy made 365 *eastbound* trips around the globe, would he have an extra year on earth? And if he was destined to be bumped out of existence by a taxicab, how would the cab driver know what day was the right one for bumping this guy off? I'm confused, are you?

✦ ✦ ✦

You Name 'em. Among the 7,000 islands that make up the Philippine archipelago are two islands called **Two Brothers.** But one is called Carlotta and the other is Isabel. Figure that one out for yourself. (Maybe they're refugees from the U. S. Department of State) Not far away are the **Three Kings** islands, but there are only two of them. Great kidders, those Filipinos.

✦ ✦ ✦

World's Worst. Far down at the southern end of the Philippine islands I kept hearing about a tropical fruit called **Dorian** that was filled with rich vitamins and very good to eat. But I was warned that it had a very bad odor.

In the small town of **Jolo** almost at the southern tip of the archipelago and only a short distance from Borneo, I went with a group of friends to the house of the local manager for Philippine Air Lines. I hadn't been inside the house very long when I became aware of a putrid odor that almost knocked me out. Pretty awful people, I thought, having such an odor in their house and I began to have misgivings about the kind of people PAL hired. But I was too polite to say anything and intended to get outside the house as soon as I could do so without causing a commotion.

In a few minutes the hostess entered the living room with a big tray filled with cut up fruit—and it turned out to be Dorian. I couldn't work up enough nerve to taste it, but I'm told you can get accustomed to it and that it really is delicious. But the odor is indescribable. Just plunge a knife into the prickly thick skin and out comes the odor like oil rushing from a gusher.

The odor from one fruit is so potent, in fact, that PAL has a strictly-enforced regulation against passengers carrying any of this fruit on board. One single fruit will smell up an airplane for days. At a fruit market in **Zamboanga** I watched a merchant plunge a knife into a Dorian much as one plugs a watermelon. With lightning speed the odor expanded in all directions. I can assure you it is most disagreeable. It's like a consolidation of twenty sewage systems.

On the other hand there is a fruit in the southern Philippines called the **mangosteen** (also found in other places such as Siam) which is the sweetest of all fruits. Looks something like a mango. You huck off the thick skin and inside is a ball of white meat made up of slices much like a tangerine or orange. The white meat, perfectly delicious, covers large seeds. You have to eat a lot to get a full meal, but it's worth the effort.

✦ ✦ ✦

Rice Puppies. Despite the large modern cities in the Philippines there's a lot of wild and virtually unexplored territory in the islands. Some of the isolated tribes are quite dangerous and were, until recent years at least, cannibalistic. There are plenty of strange customs and strange foods despite the over-all Americanization of the people.

Take the eating of dogs, for example. It's done in the islands today, and apparently is quite common in some areas. The idea is to starve a dog for awhile, then let him gorge himself on rice. When he's well stuffed, then they beat the dog to death. The blood soaks the rice, giving it good flavor. Then they roast the dog much as we roast a pig. Sort of a chow dog, I guess.

✦ ✦ ✦

Check Your Arms. The leading hotel in the Philippines is the **Manila Hotel,** owned by the government. It isn't too good nor too bad. One wing has been air-conditioned and that's a real blessing. But the chief feature of the Manila Hotel is the sign prominently displayed on the reception desk: "No firearms allowed. Please check at desk."

✦ ✦ ✦

Rummage Sale. The other day while walking to the bus to go to my office it occurred to me I've collected a lot of clothing and apparel while traveling. At that moment I was wearing a hat purchased in **London,** a shirt purchased in **Lima,** Peru; a tie bought in **Damascus,** Syria, and a topcoat tailored for me from English cloth by a Chinese tailor in **Hongkong.**

Martin Staffed for Systems Engineering

Guided missiles experience aids company in implementing this airplane design concept

Guided missiles were the first aircraft to attain supersonic speeds—to acquire fully automatic control—to require the close design integration of components which The Glenn L. Martin Company calls *Systems Engineering*. Today, supersonic speeds and increasingly difficult missions demand that piloted airplanes, too, be designed as integrated airborne systems.

That's why Martin engineering is staffed by representatives of all three elements in the production of modern airplanes—airframe and power plant—electronic flight and navigational controls—and military armament or passenger facilities.

Complete Development Coordinated

No longer is aerial-weapons engineering concerned solely with the development of flying vehicles whose only goal is speed. And the complete development of an aerial weapon must be so scheduled that the end product represent a completely coordinated system.

Radar, servo-mechanism, automatic control, automatic computer and antenna experts—as well as aerodynamicists, structural engineers and electrical, hydraulic, armament and power plant installation specialists—are all part of the well-integrated engineering team Martin offers its customers today.

Martin Ads Tell Air Power Story

Reaching millions of informed, alert American magazine readers, Martin advertisements like this highlight air power's important role in our country's preparedness program.

Survey after survey has demonstrated that their story-style appearance attracts an extremely high readership and a worthy audience for the facts on this vital question.

MODERN AERIAL WEAPONS *depend on electronic experts' little black boxes—circuits, tubes and gadgets that help man overcome his physical limitations in his constant conquest of the Air.*

They're putting wings on little black boxes

Many of our new winged weapons are pilotless. But even in today's piloted aircraft, man can't see far enough, can't move fast enough, can't live unaided at the temperatures and pressures he must endure. He needs the assistance of mechanical and electronic senses, muscles and nerves. That's why today's aerial weapons engineering demands a teaming of specialists in skills unheard of a decade ago.

Here at Martin, we call it *systems engineering*. Airframe and power plant, electronic flight and navigational controls and military armament—all are represented on a Martin engineering team that is designing aircraft as integrated airborne systems.

A Navy Viking high-altitude research rocket, missiles and target drones soaring into the blue. An Air Force XB-51 jet-powered ground support bomber roaring down in a simulated strafing run. A Navy P5M-1 Marlin being readied for sub-hunting duty. A dependable Martin Airliner gaining precious time for vacationist and businessman. All these are products of Martin *systems engineering*—part of a new trend in aeronautical designing that is putting wings on little black boxes—to help man overcome his physical limitations—to help him guard the peace and enjoy it.

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(*Continued from opposite page 3*)

as a Boeing B-47 combat training facility and provide the city with a new commercial airport. Recommendation was dictated by proximity of field to Boeing's Wichita aircraft plant and by AF's announced intention to establish a permanent air base at Wichita.

Civil Bids Disclosed: Winning bid of Graham Aviation Co., Butler, Pa., for 15 months' operation of Air Force basic flight school at Greenville Air Force Base, Miss., was $2,700,000, it has been revealed. California Eastern Airways, winner at Columbus AFB, Miss., bid $2,200,000.

AIRLINES

Interchange Progress: Airlines have already held meetings to work out details of two interchanges called for by CAB in its recent southern transcontinental decision. American, Delta and National plan to submit an agreement to CAB by Mar. 15 covering use of DC-6's over NAL's Miami-Tampa-New Orleans segment, Delta's New Orleans-Dallas, and American's Dallas-west coast. Service may be inaugurated by early spring. American, Braniff and Continental will submit agreement by Mar. 15 on use of DC-6's and Convairs over Braniff's Houston-San Antonio, CAL's San Antonio-El Paso, and AA's El Paso-west coast. They also plan to start in early spring.

EAL-PAA Charter: Eastern Air Lines and Pan American World Airways have signed agreement under which EAL will charter certain PAA Stratocruisers and Constellations for New York-Miami non-stop extra-section flights. Planes are those which are used by PAA on Atlantic and which are ferried to Miami for maintenance purposes. Agreement is valid for one year. PAA crews would fly the planes, and EAL would pay straight charter rate of $1 per mile for Stratocruisers and 70c for Constellations.

Ramspeck Leaves ATA: **Robert Ramspeck** has resigned as executive vice president of Air Transport Association to accept chairmanship of the Civil Service Commission, succeeding **Harry Mitchell,** who has retired. Ramspeck, for many years a Congressman from Georgia, has been with ATA since 1946.

Pilots on Critical List: Commercial airline pilots have been added to Labor Departments critical list of occupations in Category A, the top classification. Although the rating does not automatically defer pilots who are in the reserve or subject to draft, it will strengthen airlines' applications for deferments in specific cases. It is understood that military will generally recognize the new job status of commercial pilots except in cases where the pilot seeks to return to active service.

C&S-PAA Interchange: Chicago & Southern Air Lines and Pan American World Airways have filed agreement with CAB proposing one-plane service between Chicago, St. Louis and Mexico City via Houston.

New REA Agreement: A new agreement, which will guarantee Railway Express Agency a profit and which may also result in 20% increase in air express rates, has been entered into between REA and domestic airlines, retroactive to Jan. 1, 1951. REA had insisted on a guaranteed profit during negotiations which have extended over two-year period. Airlines, in order to maintain present express revenues and to meet higher payments to REA, have agreed to increase rates 20%, subject to CAB approval. Present ton-mile express rate is 61.4c, of which airlines get about 35c and REA 26c. New rate would be between 72c and 80c, with airlines' share remaining constant and REA's jumping to between 40c and 45c.

Convair Orders: Hawaiian Airlines has ordered four Convair 340's from Consolidated Vultee Aircraft Corp. and has an option for two more. Continental Air Lines, which had option for eight, is buying seven and asking option on three more. United Air Lines has confirmed order for 30 of the planes costing about $16,500,000, with first deliveries scheduled for early 1952 (News Section, Jan. 22, Feb. 19).

NWA Coach Fare Increase: CAB approval of increase from 4.5c to 5c per mile in various non-competitive air coach fares is asked by Northwest Airlines, which states that fare hike is necessary to offset higher operating costs. Included would be service between Chicago and New York on one hand, and Portland, Ore., on the other. Fares in east, where competitive coach services exist, would not be affected.

Meets Fare Cut: Pan American World Airways plans to cut New York-San Juan tourist fares to meet those filed recently by Eastern Air Lines, which starts service on the line Mar. 26. PAA proposal, which needs CAB approval, involves reduction from $75 to $64 in one-way fare.

Sales Agency Agreement: U. S. airlines and travel agents will put a new type of sales agency agreement in effect Apr. 1. All agreements will be between Air Traffic Conference, as airlines' agent, and individual travel agents. In the past, individual airlines have had agreements with individual agents. New plan is expected to cut costs for airlines and agents.

Resort Moves: Resort Airlines has moved operating, accounting and disbursing offices from Resort Field, Pinehurst, N. C., to Hangar No. 1, Twentieth St. side of International Airport, Miami, Fla. Address is PO Box 242, International Airport Branch, Miami 48, Fla.

NWA Appointments: **Dudley S. Cox,** manager of flight operations for Northwest Airlines, has taken over duties formerly performed by **Mal Freeburg,** who resigned as operations executive, and **Ben Curry,** general superintendent of aircraft maintenance, has assumed duties of **R. E. Geror,** resigned as assistant to the vice president-operations and engineering. Changes followed appointment of **Frank Judd,** former western regional vice president, as acting vice president-operations and engineering, replacing **Ken Ferguson,** who retains title of vice president.

People: Newly-elected directors of Pan American World Airways are **Robert V. Fleming,** president and board chairman of Riggs National Bank, Washington, and **Merrill Griswold,** board chairman of Massachusetts Investors Trust, Boston . . . Capt. **Samuel H. Miller,** Atlantic Division chief pilot of Pan American, has been named acting division operations manager, replacing Capt. **Harry B. Fleming,** who requested reassignment to flight duty with Latin American Division.

CIVIL AERONAUTICS BOARD

Actions

• **Air Transport Association of America** granted leave to file a brief as **amicus curiae** in Western Inland Mail Rate Case, as CAB reversed an earlier ruling which denied ATA intervention. To be filed by Mar. 15, brief will reflect views of scheduled industry on CAB proposals to (1) consider as "other revenue" profits derived by Western from sale of Route 68 to United Air Lines, and (2) adopt a new Federal income tax principle when figuring mail rates.

• **Atlas Corporation** authorized to continue stock holdings in Northeast Airlines until after final CAB decision in Delta-Northeast Merger Case. If merger is approved, Atlas has six months to dispose of all of its common and preferred stockholdings in NEA in excess of 3% of outstanding shares. If merger is disapproved, twelve months will be allowed. Disposing of the stock was a condition imposed by CAB in Apr. 1948, when it approved Atlas' control of Consolidated Vultee Aircraft Corporation.

• **Unit Export Company, Miami, Fla.,** awarded an individual exemption to continue operations as a large irregular for two more years. Carrier leases one Curtiss C-46 type aircraft in its operations which are primarily confined to carriage of cargo. According to CAB, Unit Export has not operated in excess of the limitations imposed on non-scheduled airlines.

• **World Airways,** Teterboro, N. J. turned down on application for an individual exemption to continue operations as a large irregular. Board said the carrier furnished unauthorized "route-type services" between New York and Los Angeles/San Francisco. Line may appeal within 30 days.

• **Pacific Alaska Air Express** turned down on appeal of CAB order which denied individual exemption for large irregular carrier operations.

Applications and Petitions

• **Post Office Department** charged that CAB erred recently when it proposed mail rates for Colonial Airlines' Bermuda operations which would compensate the carrier for increased income taxes. Rates, which would become effective Jan. 1, 1952, provide for a tax allowance computed at the recently increased rate of 47% of taxable income in lieu of the previous 38%. PO said this defeats purpose of the tax hike by placing the burden directly on it to pay the taxes.

• **Pan American World Airways** wants Board to reverse recent decision in which Eastern Air Lines was authorized to operate between New York and San Juan. Pan Am, which also operates New York-San Juan services, said the duplication will result in an increase in its need for mail pay by more than $2,500,000 a year.

CIVIL AVIATION

CD Aviation Office: Decision is expected shortly on establishment of an aviation office under transportation section of Civil Defense Administration. Office would be responsible for planning and coordinating use of civil aviation facilities in event of bombing or war emergency.

KC Port Authority: A Greater Kansas City Port Authority would be created through a bill introduced in the Kansas legislature, and a similar bill will be presented to Missouri legislature. Port Authority would permit over-all master planning of Kansas City's two downtown airports, Municipal Air Terminal in Missouri and Fairfax Airport in Kansas, which are only 10,000 ft. apart although in different states.

CAR Amendment: CAB is circulating for comment a proposed amendment to Part 42 of the Civil Air Regulations which would require that communications and navigation equipment carried aboard all large transport planes be of an approved type. In effect this would make it mandatory for many of the large irregular carriers operating under Part 42 to install more modern equipment. Tentative compliance date is Dec. 31, 1952. CAB will accept comments until April 1, 1951.

Lightplane Shipment: Aircraft Industries Association reports that January civil shipments of four to 10-place executive type aircraft exceeded the total personal aircraft shipments during the same month last year. The January, 1951, shipments totalled 246 one to 10-place aircraft consisting of 153 planes of four places and more, and 93 two-place aircraft. Shipments for same month last year totalled 152 planes, including 108 of four places and more, and 44 two-place planes.

FINANCIAL

AA's Strong Position: American Airlines "measures up as having the greatest potentialities in earning power with the attachment of minimum risks," according to an analysis of the strategic position of the air transport industry, prepared by Kidder, Peabody & Co., New York stock brokers. Report estimated that, provided commercial services are not unduly restricted, American may show 1951 total revenues of $132,600,000 (against 1950's $115,250,000) and total operating expenses before taxes of $109,650,000, for estimated net income before taxes of $22,950,000. Commenting on AA's 25c dividend paid last September, the report said "it is possible that more liberal distributions to stockholders in relation to available earnings will prevail during 1951."

Manufacturing

Consolidated Vultee Aircraft Corp. had $10,241,644 net profit on $256,000,000 sales for fiscal year ended Nov. 30, 1950, against $3,713,156 profit on $197,000,000 sales in previous year. Backlog on Nov. 30 was $215,000,000, but company has received additional business since.

Douglas Aircraft Co. reported net income of $7,214,000, or $12.02 a share, on sales of $129,893,000 for fiscal year ended Nov. 30, 1950, compared with $5,516,700 profit on $117,421,954 sales in previous year. Backlog at end of year was $656,362,000 against $275,499,000 a year earlier.

Kaman Aircraft Corp. has net operating loss of $69,371 for year ended Dec. 31, 1950. Comparison is not available. Company is now engaged in 100% in production of Navy HOK-1 and HTK-1 training helicopters.

Dividends

Sperry Corp. voted quarterly dividend of 50c per share payable Mar. 21 to stockholders of record Mar. 5.

Airlines

National Airlines reports January net income of $270,611 after taxes and depreciation reserve, compared with $144,195 profit in same month last year.

LABOR

ALPA's Labor Trouble: Seventeen employes of Air Line Pilots Association, represented by ALPA Professional and Administrative Employes Union, have filed petition with Chicago office of National Labor Relations Board asking for union election. Move resulted from dispute over wages and working conditions with David L. Behncke, ALPA president, who reportedly refused to negotiate. Employes, including lawyers, engineers, statisticians, contract negotiators, etc., were said to have protested against long hours they are required to work without overtime payment. Group's salaries range from $4,500 to $8,500 annually. Protests came in middle of New York hearings of Presidential Emergency Board on new ALPA contract with American Airlines, involving flight mileage limitation. Some AA pilots were said to believe that ALPA's drawn-out presentation was prejudicing their case. Board has extended deadline for submission of its recommendations to Mar. 14.

IN GENERAL

Air Races Uncertain: The 1951 National Air Races may not be held this year, following conversion of former bomber plant at Cleveland Municipal Airport into tank factory and consequent decision that it wouldn't be practicable to hold them at Cleveland. Races were postponed from last Labor Day to May 19-20, 1951 after Defense Dept. said military participation would only be allowed during Armed Forces Week. Race officials say they're looking for another site.

Chamber Reversal: Reversing a previous position, transportation committee of U. S. Chamber of Commerce has recommended, with airline representatives dissenting, establishment of a permanent single transportation regulatory agency, except for emergency functions, which would report directly to Congress. Policy committee, board of directors, and membership must still act on recommendation.

OFF THE PRESS

The Aircraft Year Book, 1950 edition, published by Aircraft Industries Association. Contains a review of events and developments in military and civil aviation in the U. S., a directory of aircraft executives, companies, statistics, chronology, etc., and an encyclopedia of little-known facts and historical side lights. Lincoln Press, Washington, D. C. 477 pages, illustrated. Price $6.00.

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Magnetic Compasses
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Turn and Bank Indicators
ODR Components

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Reverse Current Cutouts
Voltage Booster Dynamotors
Voltage Regulators
Power Failure Indicators

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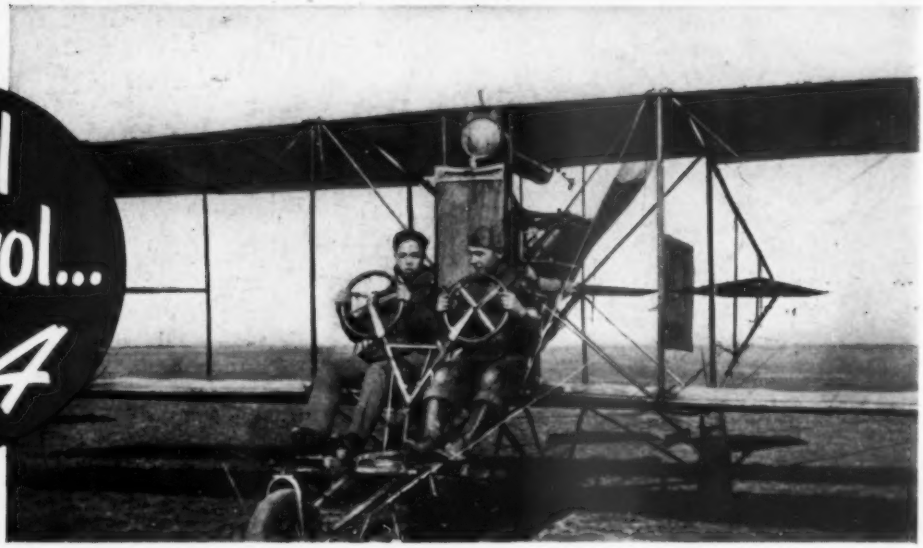
Dual Control... 1914



Over 35 years ago, Billy Parker taught students from the left hand seat of this dual control pusher. You paid $90 an hour to sit just forward of the lower leading edge and train the seat of your pants in maneuvers necessary to qualify for an Aero Club pilot's license.

Dual Control... 1951

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AVIATION PRODUCTS

American Aviation

THE AIR INDUSTRY'S FIRST NEWS MAGAZINE

NEWS ISSUE

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a LOOK at the WEEK

Small airplane manufacturers will soon be authorized by CAA to certify their own airplanes. Last Congress passed law allowing such a move. Additional delegations will follow.

•

Manufacturers face problem in trying to expand engineering forces. Recent college graduates, a big source, are subject to draft. Although reserve call-ups of engineers haven't been unduly high, it's interesting to note that industry survey shows percentage of engineers in reserves is higher than in almost any other job classification.

•

CAA is still looking for a way to screen out non-essential private flyers, so Air Coordinating Committee will approve planes and parts for essential users. ACC recognition of essentiality is necessary if lightplane makers and users are to get materials when Controlled Materials Plan starts in July.

•

CAA's modification board working on Martin 202 has come up with some requirements for changes in system arrangements commonly used in transport design. This is expected to mean changes in other airline planes, as well as 202.

•

U. S. airlines didn't get as large a share of trans-Atlantic business last year as they did in 1949. Split was about 56% U.S., 44% foreign. U.S. lines' share in 1949 was 60%.

•

CAB's staff is talking in terms of 42c a ton-mile mail pay for Big Four (American, United, TWA, Eastern) instead of current 60c. CAB staff work is now being done on case; hearings start next month.

•

Local service airlines and Air Transport Association will push for amendment to prototype aircraft testing law to provide $10 million for design, construction and testing of a local service plane. Present law only allows testing.

•

Manufacturers and airlines who have been furnishing technical personnel to represent U.S. at International Civil Aviation Organization meetings think U.S. should cut down its participation. Reason is that technical people are badly needed at their own plants. A moratorium on new ICAO projects is favored.

Rentzel Directs Civil Air Mobilization

A sweeping executive order has placed civil aviation's war mobilization plans under the Secretary of Commerce, and Delos W. Rentzel, who is to leave the CAB chairmanship to become Undersecretary of Commerce, will have widespread control over aviation and other forms of transportation.

The changes mean that:

- In event of war, civil aviation will remain under civil control, although closely tied to defense.
- Rentzel will be responsible for carrying out, in case of war, procedures being established by the civil aviation mobilization task groups. These groups, which have been working for several months under National Security Resources Board direction, were chairmanned by Rentzel.
- As Undersecretary of Commerce, Rentzel will be working head of the Department's Transportation Council, which includes CAB, Maritime Board, CAA and Inland Waterways. Phillip Fleming, present Undersecretary, is resigning to accept a diplomatic post.

Here are the powers which the President's order (No. 10219) gives to the Secretary of Commerce:

Airline-Defense Needs: Assemble and analyze data on requirements of civil air transportation and of Defense Dept. for planes of the types used by civil air carriers.

Planes for Military: Form plans and programs, and initiate such actions, as may be desirable to meet requirements for civil air transport and for types of planes used by civil airlines, including plans and programs for (1) transfer or assignment of planes from airlines to Defense Dept., when required to meet needs of armed forces approved by Director of Defense Mobilization, and (2) such redistribution as may be necessary of the remaining planes among civil carriers to assure maintenance of essential civil routes and services.

Plane Allocation: Allocate planes of types used by airlines as required to meet needs of armed forces and to maintain civil routes and services.

Priorities: As necessary, schedule movement of traffic and administer priorities for transport of passengers, cargo and mail by airlines, subject to such policies as Defense Production Administrator may prescribe.

Claimant Agency: Act as claimant for materials and manpower for construction, operation, maintenance and repair of civil air transport systems and facilities.

Establishment of Agencies: Establish such agency or agencies within Commerce Dept., and utilize services of CAB and of such other federal, state and local agencies, as he deems desirable in performance of his functions.

Airports and Airways: Another section of the order gives Commerce Secretary control over airports and airways, streets and highways under provisions of existing law, including those under Defense Production Act.

Gurney to Replace Jones on CAB

Harold Jones has resigned as a member of the Civil Aeronautics Board, effective Mar. 15, and President Truman has nominated former Sen. Chan Gurney, a South Dakota Republican, to succeed him. Jones, whose term would have expired at the end of 1952, had expressed a desire to resign some time ago.

There was no indication at presstime as to who would be named CAB chairman to succeed D. W. Rentzel, who is to become Undersecretary of Commerce (see above).

REFERENCE COPY

Priority for MRO Supplies

All businesses have been given permission by National Production Authority to use a Defense Order rating to secure maintenance, repair and operating supplies.

The NPA Regulation 4 means that such priorities are available to aircraft manufacturers, airlines, non-scheduled carriers, and other civil aviation users. Some manufacturing officials expressed the belief that application of the DO by all types of businesses may so dilute the priority that the situation may get worse instead of better. Manufacturers have been able to get some supplies under their DO-1 (aircraft) priority.

Following are pertinent provisions:

• **DO-97** may be used without individual authorization by NPA. It covers MRO supplies and can't be used to purchase production materials or major capital items.

• **If a concern elects** to use DO-97 even on a single occasion, it must then limit its MRO purchases in accordance with Regulation 4.

• **MRO purchases** under the regulation are limited in any one calendar quarter to one-fourth of firm's dollar purchases for MRO purposes in 1950 (or fiscal year ending nearest to Dec. 31, 1950). If this quota is too small, firm may ask NPA for increased quota. Special provision is made for seasonal businesses.

• **New firms** started after Dec. 31, 1950, are permitted to acquire for MRO purposes the minimum amounts necessary for operation, up to $5,000 a quarter. Special NPA approval is necessary to exceed that amount. Businesses in operation only a part of 1950 are permitted a quota in proportion to amount they spent for MRO while they were in operation.

Complete information on the regulation is available from NPA in Washington or from Department of Commerce field offices.

MANUFACTURERS

Martin to Build Canberra: The Glenn L. Martin Co. will produce under license an undisclosed number of the British Canberra light jet bomber, Air Force announced. The model built by Martin will be a night intruder version of the plane, which is presently manufactured for the Royal Air Force by English Electric Co. AF has also authorized Martin to prepare one of its two experimental XB-51 light jet bombers as a production prototype.

Machine Tool Order: Effective July 1, 70% of all machine tool production will be made available each month to the armed services or contractors doing work for them. National Production Authority has also issued Orders M-40 and M-41 stating that manufacturers needing machine tools will be required to channel their purchases through the General Services Administration.

R-130 License: Pratt & Whitney Aircraft Division and Continental Aviation and Engineering Corp. are negotiating a license under which Continental will build P&W R-1340 Wasp 600-hp piston engine. Continental, which built over 5,000 Wasps for P&W during last war, will take over all R-1340 production for duration of emergency.

2,000 C-W Subcontractors: Curtiss-Wright Corp. has already lined up 2,000 subcontractors to handle its expanding military production program, and expects to add another 2,000 to 3,000 soon, according to **Roy T. Hurley**, C-W president. Most of the 2,000 were obtained during a recent drive in large east coast industrial cities and in the central part of the country.

Convair Missiles Division: A Missiles Division has been established at San Diego by Consolidated Vultee Aircraft Corp. to handle its military guided missiles work. **Gage Irving**, assistant to the president, has been named manager. Division will employ 1,500 within next few months.

Expansion

Aerojet Engineering Corp. has received building permit for $1,500,000 administration building and warehouse at new plant on 7,200 acre site 16 miles east of Sacramento. Full project will cost between $6 and $8 million and will consist of 60 to 80 small separated buildings for manufacturing solid propellant rocket motors.

Fairchild Engine & Airplane Corp. will start construction this month of first building of new Guided Missiles Division facilities at Wyandanch, L. I., N. Y. Plant cost is estimated at $1,750,000.

Douglas Aircraft Co. is starting construction of 307,200 sq. ft. warehouse building at El Segundo plant. Building, to be erected on Navy property with Navy funds, will cost $3,200,000.

The Glenn L. Martin Co. will hire several hundred new employes following receipt of order from Eastern Air Lines for 25 more Martin 404's.

Cessna Aircraft Co. has added 47% more manufacturing space as result of expansion program just completed at plants at Wichita, Hutchinson and Prospect, Kans.

A. V. Roe Canada will build new plant at Malton, Ont., enabling company to double production of CF-100 all-weather jet fighter.

North American Aviation has leased 273,000 sq. ft. more space in six new facilities in Los Angeles area to make room for expanding activities.

Subcontracts

Gibson Refrigerator Co., Greenville, Mich., has received subcontract from Kaiser-Frazer Corp. for control surfaces and other parts of Fairchild C-119 Packet which K-F will build under license.

Edo Corp., College Point, L. I., awarded contract by Republic Aviation Corp. to build fins and rudders for F-84 jet fighter.

People: Boeing Airplane Co. has elected four additional directors: **Edward C. Wells**, vice president-engineering of the company; **John O. Yeasting**, vice president-controller; **William G. Reed**, president of Simpson Logging Co., and **J. P. Weyerhaeuser, Jr.**, president of Weyerhaeuser Timber Co. . . . **Alfred B. Bennett** has been elected vice president in charge of sales of Taylorcraft Inc.

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PLANES & EQUIPMENT

202 Changes: Modifications in Northwest Airline's Martin 202's that will cost about $15,000 per plane have been recommended by CAA's 202 modification board. Some of the changes, it was said, will extend to TWA's 202A's. It is not known if adoption of the report will affect action of NWA pilots, who are reported to have stated that they will not fly the 202's after Mar. 17.

New Gilfillan Device: The Automatic Traffic Control Monitor, a new electronic device which can keep track of three aircraft simultaneously from a point about five miles from the end of a runway and record each plane's approach speed and distance in miles, has been developed for Air Force by Gilfillan Brothers Inc., Los Angeles. Unit, which was developed and delivered in four months at total cost of under $12,000, is for use in conjunction with radar ground controlled approach equipment. It is expected to cost under $4,500 in production quantities.

C-97C Delivered: First model of new C-97 Stratofreighter series, the C-97C, has been delivered by Boeing Airplane Co. to Air Force. Plane has stronger fuselage structure than predecessors, but gross weight is same. Landing gear is same as B-50 bomber, to permit interchangeability.

MILITARY

B-52 Production Ordered: Although the first experimental model is still a long way from test flight stage, Boeing B-52 has been ordered into production by Air Force and first deliveries may be made in late 1951. Plane is eight-jet, 350,000-lb scaled-up version of B-47. First of two "X" models should fly this autumn, AF Secretary **Thomas K. Finletter** said. He also disclosed that AF has decided to proceed with swept-wing jet version of Convair B-36, with first flight scheduled for late this year. There is a possibility, he added, that jet B-36 and B-52 will be in production simultaneously.

Beaver Wins: Air Force's liaison plane competition has been won by Canadian de Havilland YL-20 Beaver, single-engine high-wing monoplane. Minimum order will be 105; maximum is not known. Plane is powered by Pratt & Whitney R-985 450-hp engine driving Hamilton Standard propeller. Weight is 2,800 lbs. empty. Beaver won over seven American entries: Ryan Navion, Helio Corp. Super Four, Cessna 195, Bellanca Senior Skyrocket, Aero Design Aero Commander, Atlas H-13 and Aquaflight's Aqua II.

Civil Schools Increased: Seven more civilian schools have received Air Force contracts to train aircraft and automotive maintenance men and clerks, bringing the total to 12. They will enroll some 355 airmen each week in courses ranging in duration from nine to 16 weeks. Just awarded contracts are Aero Industries Technical Institute, Oakland, Calif.; St. Louis University's Parks College, E. St. Louis, Ill.; New Mexico Highlands University, Las Vegas, N. M.; Bowling Green State University, Bowling Green, O.; Commercial Trades Institute Inc., Chicago; Vale Technical Institute, Blairesville, Pa., and Oklahoma A&M College's School of Aeronautical Training, Okmulgee, Okla. Previously-awarded contracts went to Spartan School of Aeronautics, Tulsa, Okla.; Cal-Aero Technical Institute, Glendale, Calif.; Dallas Aviation Schools Inc., Dallas, Tex.; Embry-Riddle School of Aeronautics, Miami, Fla.; University of Southern California's School of Aeronautics, Santa Maria, Calif.

People: Rear Adm. **Thomas S. Combs,** now chief of staff to commander of the Atlantic Fleet, will become chief of the Navy's Bureau of Aeronautics next month, succeeding Rear Adm. **Alfred M. Pride,** who is being transferred to sea duty . . . Maj. Gen. **Kenneth P. McNaughton,** Air Force director of training, has been named special assistant to the Deputy Chief of Staff, Personnel, in charge of contract awards to civilian technical training schools. He has been replaced by Brig. Gen. **G. B. Disoway,** formerly his assistant.

CIVIL AERONAUTICS BOARD

Applications and Petitions

• **Eastern Air Lines** wants CAB to deny petitions of Pan American, Capital, Caribbean Atlantic, and Trans-Caribbean which seek reversal of Board's New York-San Juan route award to Eastern. Also, Eastern asked Board to reconsider its stand against 4¢ per mile coach services between Miami and San Juan. Carrier plans to inaugurate triangular route service Mar. 26 between New York, San Juan, and Miami.

• **Aircoach Transport Association and Independent Military Air Transport Association** have asked Board authorization to represent designated non-scheduled airline groups before military authorities, and CAB action is expected momentarily. Aircoach represents 17 or more non-skeds, primarily of the passenger-carrying type. MATA is comprised of Seaboard & Western, Transocean, Overseas National, U. S. Overseas, Trans-Caribbean, and Flying Tiger, among others.

• **Central Airlines** asked Board for immediate increase in mail pay to meet higher costs incident to new DC-3 operations. Central is now paid 60¢ a mile for DC-3 operations, but this will drop to 50¢ on May 1. Carrier wants 80¢ retroactive to Dec. 1, 1950, and continuing through Sept. 30, 1951. From Oct. 1, 1951, through May 31, 1952, it wants 60¢ and from June 1, 1952 thereafter carrier asks for 50¢ rate.

• **Chicago and Southern Air Lines** wants CAB to suspend Ozark Airlines' tariff which proposes equalization of fares between Memphis and Paducah with those of C&S. Operating non-stop between the points, C&S claims local service lines should be required to maintain higher fares than trunks when warranted by greater mileage circuity. C&S' route is 154 miles; Ozark's 192.

Actions

• **Oxnard Sky Freight** known also as North American Airlines, ordered out of business temporarily by CAB for violating Act. Infractions were committed subsequent to institution of an enforcement proceeding against Oxnard for previous violations. Carrier is ordered to cease operations until final decision in the enforcement proceeding.

• **Trans World Airlines'** certificate for Route 2 amended to delete Columbia, Missouri, an intermediate point between Kansas City and St. Louis. Because of airport inadequacy, city has never been served by TWA.

• **Hearings will not be required** on "voluntary" interchange proposals submitted in response to CAB requests. To expedite final action on such proposals, voluntary interchanges will be approved or disapproved without lengthy procedural steps, Board ruled in supplemental decision in Through Service Proceeding. Immediately affected is an Eastern-Braniff interchange between Miami and Denver and an Eastern-Mid-Continent interchange between Miami and Kansas City.

• **Local service lines** contemplating suspension of service at a point may have to serve notice of plans on each scheduled carrier operating to two or more points on the affected route segment, under proposed regulation drafted by CAB. Presently, local service and trunks alike, need only notify carriers serving specific point involved. Board proposal is tentative, however, and may be changed before adoption.

• **Air Express International Agency** became third company to receive letter of registration from CAB authorizing international air freight forwarder operations.

Examiners' Reports

• **Modern Air Transport** should be denied an individual exemption to continue operations as a large irregular carrier, according to recommendation of Examiner William J. Madden. Denied tentatively in July, 1950, Modern appealed and was granted public hearing which Madden conducted. He said record shows the carrier operated too frequently between New York, Miami, and Puerto Rico.

Calendar

Mar. 19—Hearing in North Central Route Investigation Case. Washington, D. C. (Docket 4603).

Mar. 20—Oral argument before the Board in Air Transport Associates Enforcement Proceeding. Washington, D. C. (Docket 4265).

AIRLINES

CAL Buys Mid-West: Continental Air Lines has purchased for $70,000 the routes and control of Mid-West Airlines, local service carrier operating in Nebraska, Iowa, Minnesota and South Dakota. CAL will convert the line from single-engined Cessnas, which have been used since MWA began operating in October, 1949, to DC-3's at a cost of $600,000, and states that it will invest another $400,000 to establish service along other proposed routes from Twin Cities to Chicago via Moline, Rock Island, East Moline and Davenport. Both companies will ask CAB for extension of MWA routes from North Platte, Nebr., to Denver to connect with CAL. The certificate of MWA, which has 1,500 route miles serving 31 cities, is scheduled to expire in June, 1951.

Atlantic Route Study: Harvard Business School will make a study of trans-Atlantic air routes for the government as the first step in handling the problem of international air carrier certificates which expire next year. Contract will be awarded through Commerce Dept. or CAB. Dr. **George P. Baker,** former CAB member and holder of Harvard's transportation chair, is expected to conduct the study, aided by a number of outside advisors, possibly including **Harold Jones,** who just resigned as a CAB member. Study would not be binding on CAB, but its recommendations are expected to carry much weight.

British Planes for Wiggins: Wiggins Airways, New England local service line, will take delivery this spring on two British de Havilland Doves, twin-engined 10-passenger feeder type plane, and has an option on "several" more. Company now uses six twin-engined four-passenger Cessnas. Wiggins has asked CAB for exemption so that Doves can be used for service from New England points to New York City, using Pittsfield, Mass., as the gateway. Company does not serve New York at present.

Ferguson Leaves NWA: **K. R. Ferguson** has resigned as Northwest Airlines' vice president-operations and engineering and will enter business as an aviation consultant. **Frank Judd,** former Western regional vice president, has taken over Ferguson's duties (News Section, Mar. 5).

Capital-NAL Interchange: Capital Airlines and National Airlines on Mar. 16 will start through one-plane service between Detroit, Cleveland, Pittsburgh, Washington, Jacksonville and Miami. Two DC-4 trips will be flown daily, one regular fare, one air coach. Interchange was approved some time ago by CAB.

Coach Fare Extension: Scheduled air coach operators have asked extension from Mar. 31 to Dec. 31 of their coach fares. Affected are all such fares except those of United and Western on the west coast, which expire in June, and transcontinental tariffs of American and TWA, which are approved through Dec. 31.

Ramspeck to Ask Leave: **Robert Ramspeck** will ask the Air Transport Association for a leave of absence as its executive vice president in order to serve as chairman of the Civil Service Commission (News Section, Mar. 5). He was reportedly drafted for the CSC job by President Truman to put Hoover Commission recommendations into effect at CSC.

People: **Anson C. McKim** has resigned as Trans-Canada Air Lines' vice president-traffic to become vice president and a director of Merck & Co., Ltd. . . . **Robert J. Smith** has resigned as vice chairman of National Security Resources Board, effective Mar. 15, and will resume duties as president of Pioneer Air Lines . . . **John A. Smith** has been promoted by Continental Air Lines from sales promotion and cargo sales manager to assistant to the vice president with responsibility for federal agency and legislative matters.

CIVIL AVIATION

Balfour Heads ATS: **Maxwell W. Balfour,** Spartan School of Aeronautics, Tulsa, Okla., is serving as interim president of Aeronautical Training Society until election of a new president at the ATS annual meeting on May 28. He replaces **William J. Graham,** of Graham Aviation Co., Butler, Pa., who resigned his office and left the organization, reportedly because of a policy disagreement over Air Force's award to his company of contract for operation of Greenville AFB basic flight school.

FINANCIAL

Manufacturing

Grumman Aircraft Engineering Corp. had 1950 net income of $6,242,064 on sales of $102,533,827, against $3,191,520 profit on $59,965,277 sales in 1949.

Northrop Aircraft's preliminary profit statement shows $1,200,000 net for six months ended Jan. 31. Comparison is not available. Backlog is $195,000,000.

Ryan Aeronautical Co. had earnings of $635,165 on gross revenue of $12,512,851 for year ended Oct. 31, 1950, against $358,052 profit on $15,014,564 sales in previous year. The Jan. 31 backlog was over $29,000,000.

Elastic Stop Nut Corp. reported net profit of $610,758 on sales of $5,473,202 for year ended last Nov. 30 against $364,038 profit on $4,354,265 in previous year.

Airlines

Capital Airlines had first January profit in its history, a net of $8,342 after taxes, compared with net loss of $145,770 in same month last year. Revenue passenger-miles and revenue passengers were up 77% and 57%, respectively, over January, 1950.

Dividends

Boeing Airplane Co. has declared a $1 dividend payable Mar. 23 to stockholders of record Mar. 13.

Solar Aircraft Co. declared regular quarterly dividend of 15c per common share and special dividend of 10c, both payable Apr. 14 to stockholders of record Mar. 31.

COMING UP

Mar. 12-13—Third annual short course on uses of aerial equipment in agriculture, Purdue University, West Lafayette, Ind.

Mar. 12-14—Annual Meeting of Airport Division Board of Directors American Road Builders Association, Schroeder Hotel, Milwaukee, Wis.

Apr. 4-6—CAA Airports Advisory Committee, du Pont Hotel, Wilmington, Del.

Apr. 16-18—SAE aeronautic meeting and aircraft engineering display, Hotel Statler, N. Y.

Apr. 19-21—Airport Operators Council annual meeting Hotel Peabody, Memphis.

International

Mar. 20—Air Navigation Commission, Airworthiness Div. ICAO, Montreal.

Mar. 27—Air Navigation Commission, Operations Div. ICAO, Montreal.